Note: This portion of the document should not appear on produced Labels or IFUs. Stryker Instruments (269) 323-7700 (800) 253-3210	**Dimensions:** 8.5 inch (width) x 11 inch, print both sides	**Color/Material/Finish:** Color Graphics on White Background 20# Bond or Equivalent	**Label Stock:** N/A **Description/Type:** Instructions For Use **Part Number:** 0703-001-700	**Rev.** D

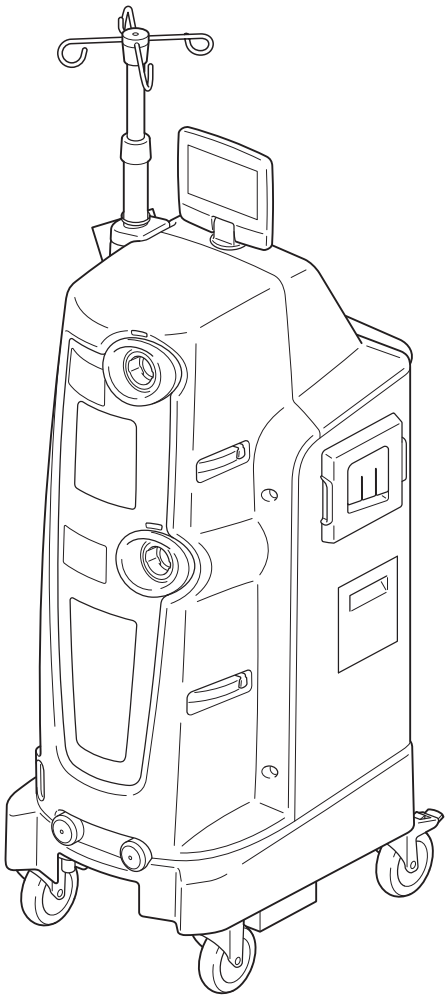
Neptune® 3 Waste Management System

120 VAC Rover

REF 0703-001-000

Instructions For Use

R_x ONLY



Software Version

002.004.xxx

ENGLISH (EN)

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WARNING

Failure to comply could result in serious injury or death.

DO NOT connect directly to chest tubes.

DO NOT connect directly to tracheal tubes.

DO NOT connect to closed wound drains.

ALWAYS use the minimum suction limit required to achieve the desired clinical outcome.

Only trained and experienced healthcare professionals may use this equipment.

For more information, including safety information or in-service training, contact your Stryker sales representative or call Neptune Customer Service at **1-800-550-7836**.

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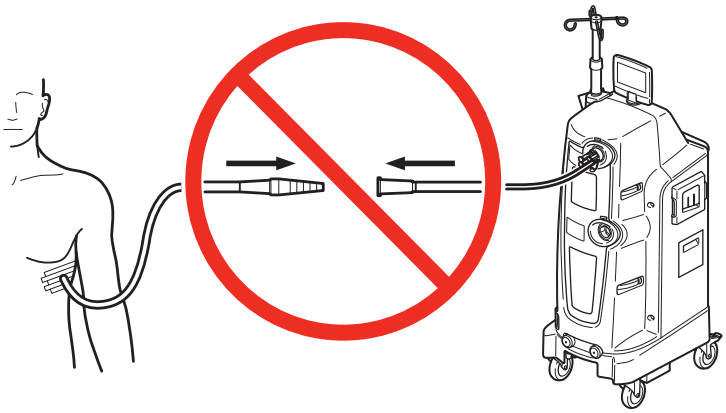
Known Use Errors

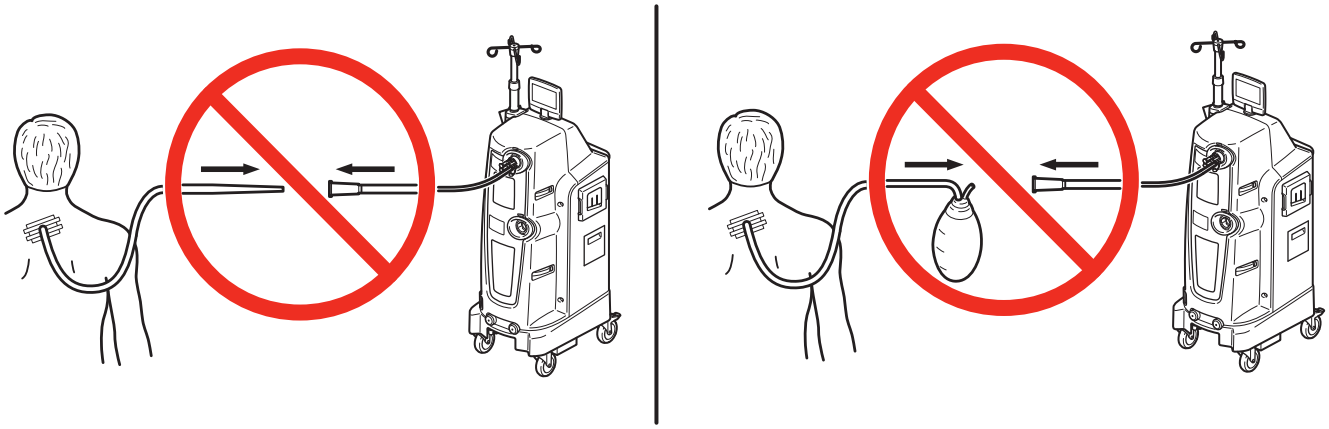
It is important to acknowledge and be aware of potential hazards associated with high suction devices prior to use. This information highlights known use errors that constitute improper and unsafe use of a high suction device, such as the Neptune 3 Rover. Stryker has received incident reports of serious injury and/or death associated with operating high suction devices.

Stryker has received reports that high suction devices have been connected directly to patients' chest tubes, postoperatively, which resulted in deaths.



Do not connect the Neptune 3 Rover directly to a patient's chest tube.

Stryker has received reports that high suction devices have been connected to patients' closed wound drains, postoperatively, which resulted in serious patient injuries.



Do not connect the Neptune 3 Rover to a closed wound drainage system.

For training information, visit www.neptunecustomercare.com.

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1 Introduction

This instructions for use manual contains information intended to ensure the safe, effective, and compliant use of your product.

Keep and consult this reference manual during the life of the product.

1.1 Audience

This manual is intended for in-service trainers, surgeons, anesthetists, circulating nurses, surgical assistants, biomedical equipment technicians, and housekeeping staff.

1.2 Conventions

The following conventions are used in this manual:

WARNING	A warning highlights a safety-related issue. ALWAYS comply with this information to prevent patient or healthcare staff injury.
CAUTION	A caution highlights a product reliability issue. ALWAYS comply with this information to prevent product damage.
NOTE	A note supplements and/or clarifies procedural information.

1.3 Contact Information

For additional information, including safety information, or in-service training, contact your Stryker sales representative or call Stryker Neptune Customer Service at 1-800-550-7836. Outside the US, contact your nearest Stryker subsidiary.

2 Indications For Use

The Neptune 3 Waste Management System is intended to be used in the operating room, pathology, surgical centers, and doctor's offices to collect and dispose of surgical fluid waste as well as collect smoke generated from electrocautery or laser devices.

3 Contraindications

The Neptune 3 Waste Management System is contraindicated against:

- Connection directly to chest tubes.
- Connection to closed wound drainage systems.

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4 Safety Directives

4.1 General Safety

WARNINGS:

- Before using this equipment, or any component compatible with this equipment, read and understand the instructions for use. Pay particular attention to safety information. Become familiar with the equipment before use.
- Only healthcare professionals trained and experienced in the use of this medical device should operate this equipment.
- Healthcare professionals should be thoroughly familiar with the *instructions for use*, performance characteristics, and the indicated, contraindicated, and intended uses of this equipment. Contact your Stryker sales representative or Stryker Neptune Customer Service for in-service training. See *Section 1.3 Contact Information*.
- The healthcare professional performing any procedure is responsible for determining the appropriateness of this equipment and the specific technique used for each patient. Stryker, as a manufacturer, does not recommend surgical procedure or technique.
- DO NOT disassemble, modify, service, or repair any equipment without the authorization of the manufacturer. Call Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
- Upon initial receipt and before each use, inspect each component for damage. DO NOT use any equipment if damage is apparent or the inspection criteria are not met. See *Table 19 Inspection Schedule and Criteria*.
- ALWAYS operate the equipment within the specified environmental condition values. See *Section 14 Specifications*.
- The collection canister scale, top display, and main display are not diagnostic tools. DO NOT use the scale or either display to determine the amount of fluid lost from or retained by the patient.
- DO NOT cover the top display or main display with drapes or other objects. ALWAYS make sure the top display and main display can be clearly seen.

4.2 Connection Safety

WARNINGS:

INAPPROPRIATE CONNECTION HAZARD

- DO NOT connect directly to chest tubes.
- DO NOT connect to closed wound drains.
- DO NOT connect directly to tracheal tubes.
- NOT FOR USE as a suction source for:
  - Intermittent suction applications
  - Patient positioner devices
  - Organ stabilizer/positioner devices

Death or serious injury can result from inappropriate connections.

4.3 Suction Safety

WARNINGS:

HIGH SUCTION HAZARD MAX = [520 mm-Hg]

- The effectiveness of aspiration is dependent upon the intensity of the suction applied.
- ALWAYS use the minimum suction limit range required to achieve the desired clinical outcome.
- ALWAYS follow your institution's guidelines for suction limits.
- The suction limit range of each collection canister may be adjusted by the appropriate suction control dial on the control panel. Interruption and restoration of rover power while suction is ON, whether accidental or intentional, does not reset the suction limit range to zero. See *BS EN ISO 10079-1: 2009, clause 13.8*. Use caution when activating suction with a high suction limit range.

Death or serious injury can result from improper suction levels.

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4.4 Electrical Safety

⚠ WARNINGS:

ELECTROMAGNETIC INTERFERENCE HAZARD

- Use only Stryker-approved electronic components and accessories. Failure to comply may result in increased electromagnetic emissions or decreased electromagnetic immunity of the system.
- Take special precautions regarding electromagnetic compatibility (EMC) when using this medical electrical equipment. Install and place this medical electrical equipment into service according to the EMC information contained in this manual. See *Section 15 Electromagnetic Compatibility*. Portable and mobile radio frequency (RF) communications equipment can affect the function of this medical electrical equipment.
- DO NOT stack or place equipment adjacent to the rover. If such a configuration is necessary, observe the configuration to ensure that electromagnetic interference does not degrade performance.
- DO NOT use the rover in an MRI environment. Using the rover in an MRI environment could affect the function of the system.

ELECTRICAL SHOCK HAZARD

- ALWAYS connect this equipment to a hospital-grade, facility power receptacle with protective earth (ground).
- DO NOT touch or make contact with the rover and patient simultaneously.

Failure to comply may cause electrical shock and result in patient or healthcare staff injury.

4.5 Environmental/Biological Safety

⚠ WARNINGS:

FIRE HAZARD: DO NOT use this equipment in areas in which flammable anesthetics or flammable agents are mixed with air, oxygen or nitrous oxide. Failure to comply may cause a fire and result in burn injury or property damage. See *BS EN ISO 10079-1: 2009, clause 9.4*.

BLOODBORNE PATHOGEN HAZARD

- The Bloodborne Pathogens Standard provided by the United States Occupational Safety and Health Administration (US OSHA 29 CFR 1910.1030) requires those employers with employees having occupational exposure to potentially infectious materials to establish a written Exposure Control Plan. The Exposure Control Plan is designed to eliminate or minimize employee exposure through use of personal protective equipment (PPE), appropriate vaccinations (for example, hepatitis B), and other control measures. ALWAYS wear PPE when operating or handling this equipment.
- ALWAYS follow local regulations regarding proper handling and disposal of biohazard waste.

Failure to comply may cause infection and result in healthcare staff injury.

CONTAMINATION HAZARD

- DO NOT collect fluids from patients being treated with radioisotopes or hazardous chemical agents.
- ALWAYS follow local regulations for safe handling, recycling, and disposal of biohazard fluid waste and equipment. See *Section 12 Disposal/Recycle*.

Failure to comply may cause environmental contamination and result in injury.

INFECTION HAZARD

- ALWAYS clean and disinfect the equipment as indicated upon initial receipt and before each use.
- DO NOT place the rover within the sterile field.
- DO NOT reuse, reprocess, or repackage a manifold that is intended for single use only.
  - A single use device may not withstand chemical, chemical vapor, or high temperature sterilization reprocessing.
  - Design features may make cleaning and disinfection difficult.
  - Reuse may create a contamination risk or compromise structural integrity resulting in operational failure.
  - Critical product information may be lost during repackaging.

Failure to comply may lead to infection or cross infection and result in patient and/or healthcare staff injury.

FLUID WASTE LEAKAGE HAZARD: ALWAYS make sure rover power is ON when collecting fluid waste. The rover can only detect full canisters if the rover power is ON. If rover power is OFF, fluid waste leakage can occur.

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5 System Overview

5.1 Operation

The Stryker Neptune 3 Rover (rover) is a mobile unit used to suction and collect fluid waste and evacuate surgical smoke from a surgical site. The rover also has a height-adjustable, powered IV pole.

During collection, fluid waste is removed from the surgical site through suction tubing connected to inlet ports of manifold(s) installed in the rover. The fluid waste is collected in the canister(s) of the rover (Figure 1). The two-canister design allows separate suction limit ranges and fluid volume measurement capability. However, both canisters use a single vacuum pump. The vacuum pump exhaust and canister exhaust are filtered.

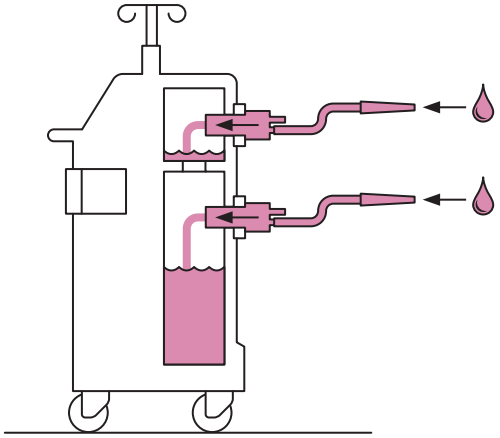

Figure 1 – To Collect Fluid Waste

Manifolds and suction tubing are single-use disposables and must be replaced between patients. However, it may not be necessary to empty the contents of the rover's collection canisters.

If the rover display indicates sufficient fluid volume capacity in one or both canisters, the rover may be used for additional surgical procedures. This concept is known as fluid stacking (Figure 2). See *Section 17 Glossary.*

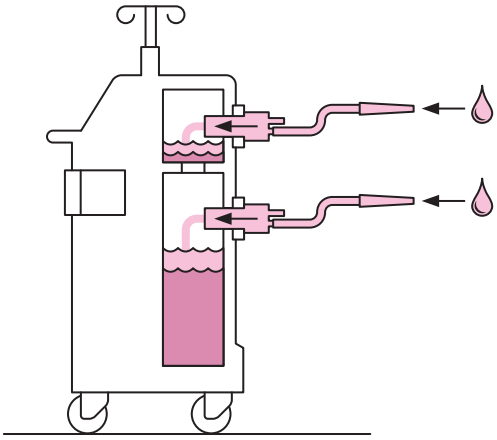

Figure 2 – Fluid Stacking

After collection, the rover is relocated and connected to the Stryker Docking Station (docker). Once the rover is connected to the docker, the emptying of the fluid waste and cleaning of the canisters occurs automatically (Figure 3).

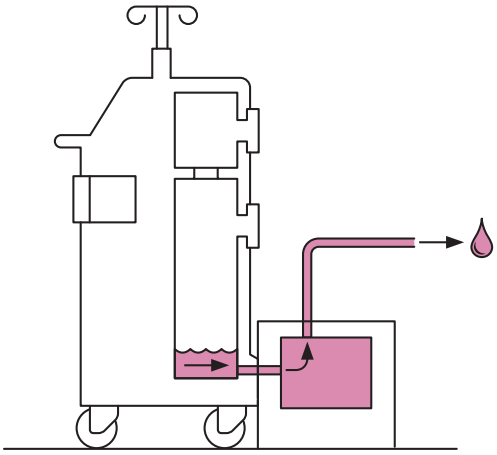

Figure 3 – To Empty the Canisters

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The rover canisters are rinsed with clean water and Neptune Docking Detergent REF 0700-001-026 to clean the canisters of any residual fluid waste (Figure 4).

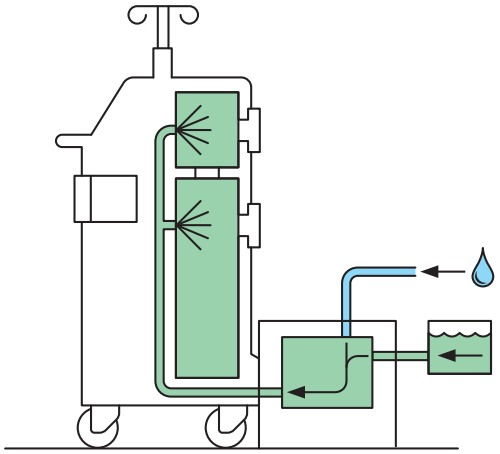

Figure 4 – To Clean the Canisters

Surgical smoke may also be evacuated from the surgical site through smoke tubing connected to the smoke evacuator filter installed in the rover. The surgical smoke is filtered inside the rover (Figure 5).

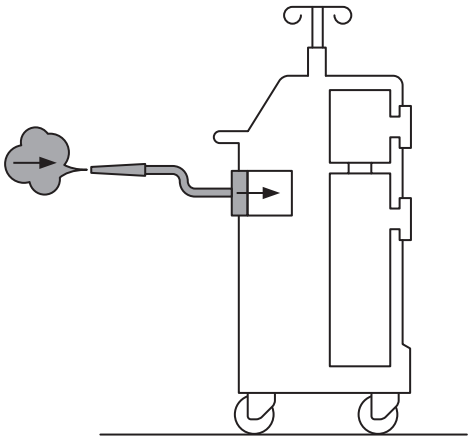

Figure 5 – To Evacuate Surgical Smoke

The height of the IV pole may be adjusted by touching and holding buttons on the control screen (Figure 6).

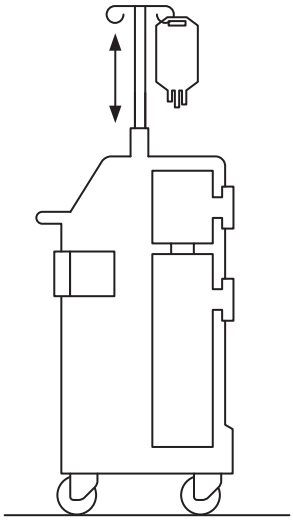

Figure 6 – To Adjust IV Pole Height

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5.2 Components and User Interface

A complete Neptune Waste Management System consists of a rover with an installed fluid suction High Efficiency Particulate Air (HEPA) filter, a docker, and various single-use, disposable devices, including one manifold per collection canister, and fluid suction tubing. A smoke evacuator Ultra Low Penetration Air (ULPA) filter and smoke evacuator tubing may also be required (Figure 7). See *Section 5.3 For Use With*.

The user interface provides complete control over functionality and provides audible, visual, and tactile feedback of status. The user interface elements include one main display with touch capability, two suction control dials, two manifold receptacle suction indicators and one top display (Figure 7, Figure 8, and Figure 9).

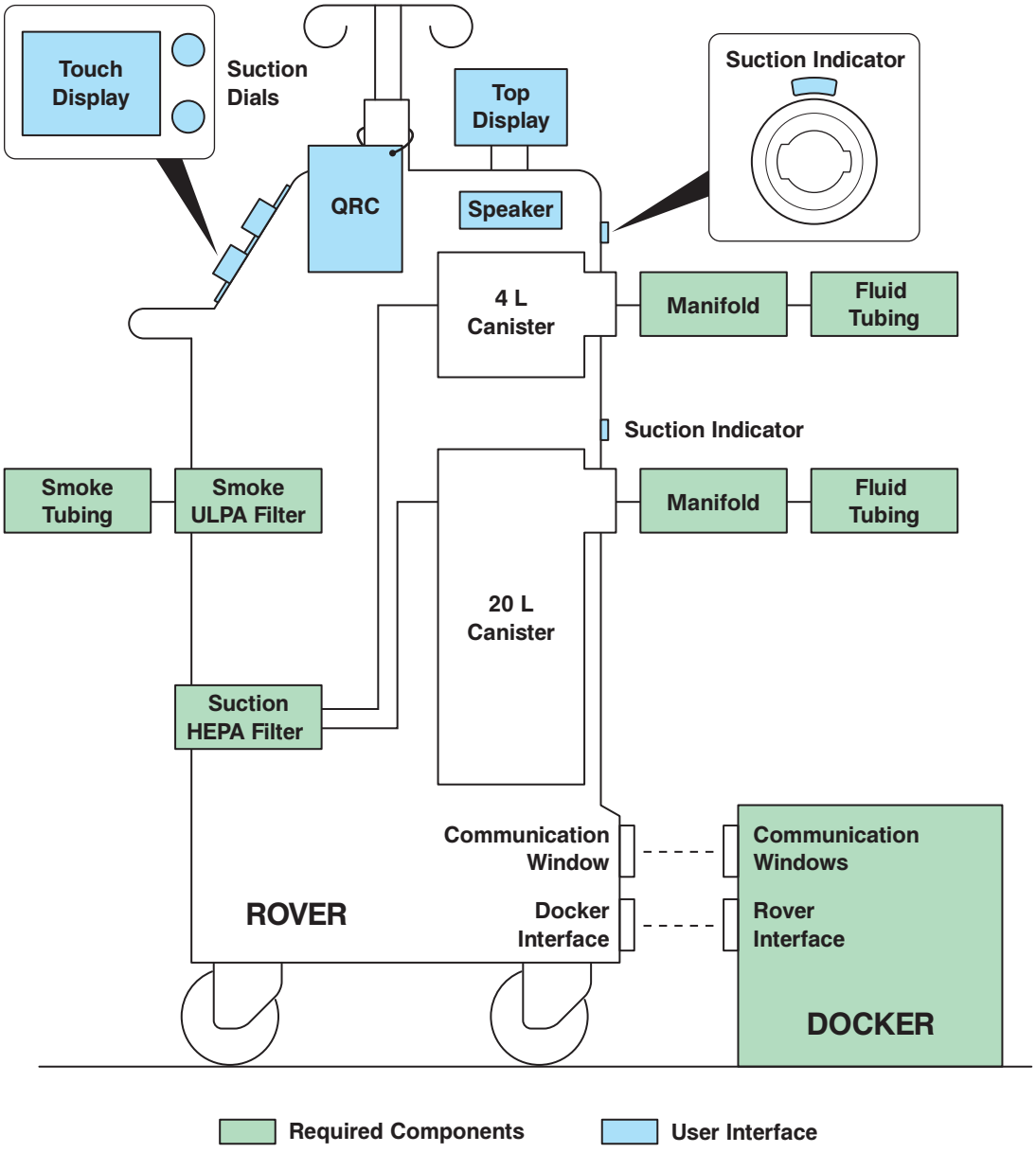

Figure 7 – Components and Interface Diagram

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5.3 For Use With

Table 1 – Components and Accessories

This table identifies required components and optional accessories used with the rover to accomplish its intended use. Components and accessories are sold separately.

DESCRIPTION	REF
Docking Station	
Neptune 2 Docking Station (120 VAC)	0702-014-000
Docking Station Accessory	
Neptune Docking Detergent (2/pack)	0700-001-026
Fluid Filter	
Fluid Suction HEPA Filter (1 each)	0702-034-000
Manifold(s)	
Four-port Manifold (20/pack)	0702-020-000
Single-port Manifold (20/pack)	0702-025-000
Four-port Manifold with Specimen Collection (20/pack)	0702-020-001
Fluid Suction Tubing	
Medical grade fluid suction tubing with 3/8 inch connector	Commercially available
Smoke Filter	
Smoke Evacuator ULPA Filter (4/pack)	0702-040-000
Smoke Tubing	
Medical grade smoke evacuator tubing with a 1/4 inch, 3/8 inch, or 7/8 inch connector	Commercially available
Smoke (Evacuator)Tubing, 3/8 inch x 10 feet (10/pack)	0702-045-023
Smoke (Evacuator) Tubing, 7/8 inch x 10 feet (10/pack)	0700-025-000
Smoke (Evacuator) Tubing, 7/8 inch x 10 feet with Wand (10/pack)	0700-026-000

NOTE: For a complete list of components and accessories or ordering information, contact your Stryker sales representative or call Stryker Neptune Customer Service. See *Section 1.3 Contact Information*. Outside the US, contact your nearest Stryker subsidiary.

5.4 Documentation

Table 2 – Component Instructions for Use

This table identifies the *instructions for use* supplied with required components.

Instructions for Use	REF
Neptune 2 Docking Station	0702-014-700
Disposable Manifolds	0702-020-700
Fluid Suction HEPA Filter	0702-034-700
Smoke Evacuator ULPA Filter	0702-040-700

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6 Features

6.1 Hardware Interface

6.1.1 Rover Front View

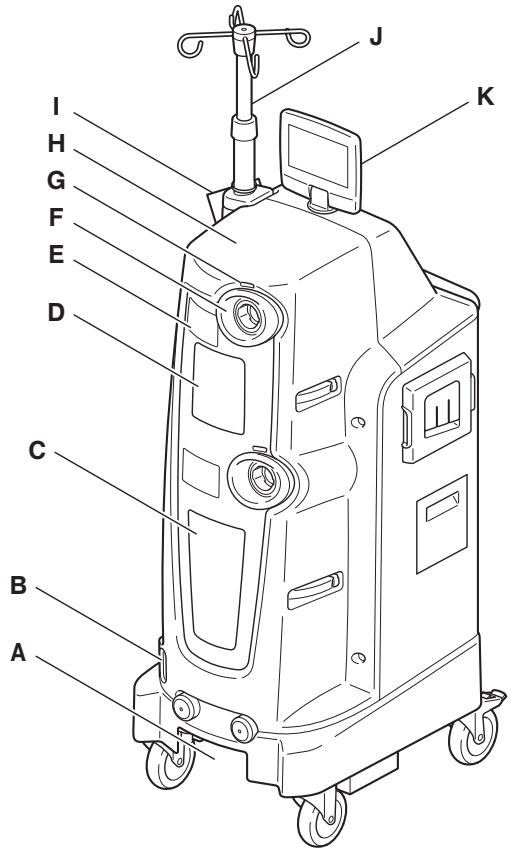

Figure 8 – Rover Front View

A	**Docking Station Interface (not shown)** – Provides a sealed flow path for fluid waste transfer from the rover to the docker. Also provides fresh water and detergent transfer from the docker to the rover canisters.
B	**Infrared Communication Window** – Allows data transfer between the docker and rover during the docking procedure. See *Section 17 Glossary* for the definition of infrared communication.
C	**20L (20-liter) Canister** – Allows for the collection and containment of fluid waste. The 20-liter canister receives fluid through an installed manifold during collection. The canister contains a fluid level sensor to provide volume information to the top and main displays. See *Section 8.3.1.3 To Manage a Full Canister*. See *Section 17 Glossary* for the definition of a fluid level sensor.
D	**4L (4-liter) Canister** – Allows for the collection and containment of fluid waste. The 4-liter canister receives fluid through an installed manifold during collection. The canister contains a fluid level sensor to provide volume information to the top and main displays. The contents of the 4-liter canister may be emptied into the 20-liter canister.
E	**High Suction Device WARNING Label (two) -** WARNING HIGH SUCTION DEVICE DO NOT connect directly to chest tubes or other closed wound drains. Failure to comply could result in serious injury or death.
F	**Manifold Receptacle (two)** – Allows installation of a disposable manifold into the canister. The installation or removal of a valid manifold enables or disables suction, respectively. See *Section 17 Glossary* for the definitions of a valid and invalid manifold. The receptacle port will close automatically when a manifold is removed. Closure prevents fluid waste leakage from the canister and prevents foreign objects from entering the canister.
G	**Suction Range Indicator (two)** – Provides color-coded visual information about the suction limit range. See *Table 5 Suction Limit Ranges and Colors*.
H	**Speaker** – Located inside the rover; provides audible event indicators. See *Table 11 Audible Event Indicators*.
I	**Quick Reference Card (QRC)** – Allows for quick access to warnings and troubleshooting information.
J	**Height Adjustable, Powered IV Pole with Four Hooks** – This IV pole is capable of supporting one three-liter [3000 mL] fluid bag per hook. The powered IV pole will return to its lowest position automatically when power is removed from the rover, to ensure proper clearance during relocation.
K	**Top Display** – Provides visual information of status, as well as safety and alarm indications (Figure 10 and Figure 17). The display swivels in a 360-degree fashion and pivots for ease of viewing from the surgical field or control panel.

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6.1.2 Rover Back View

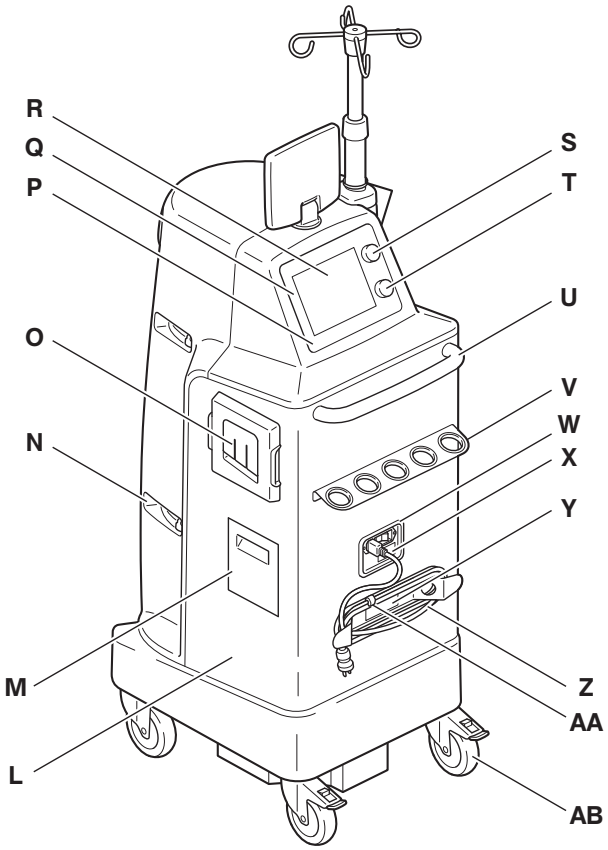

Figure 9 – Rover Back View

L	**Vacuum Pump (not shown)** – Creates suction for both canisters. If the suction level decreases in either canister due to an open manifold port, the suction level in the other canister may decrease.
M	**Fluid Suction Filter Compartment** – Allows for the installation and removal of a disposable fluid suction filter. This filter (included) provides HEPA filtration of the air from the 20-liter and 4-liter canisters. See *Section 9 Inspection and Maintenance*.
N	**Canister Viewing Door/Handle (four)** – Each canister has two viewing doors with a handle. These doors may be opened during operation to reveal the contents or closed during relocation to conceal the contents.
O	**Smoke Evacuator Filter Compartment** – Allows for the installation and removal of a disposable smoke evacuator filter (not included) with an ULPA efficiency rating.
P	**HIGH VACUUM/HIGH FLOW Continuous Surgical Suction Range: 50 to 520 mm-Hg,** – See *Section 14 Specifications*.
Q	**Control Panel** – Consists of a touch-sensitive main display and two suction control dials.
R	**Main Display** – Provides the primary operating interface via a touch-sensitive control screen. The display also provides important status information and alarm status (Figure 11 and Figure 13).
S	**4-Liter Suction Control Dial** – Allows for the rotary adjustment of the suction LIMIT value of the 4-liter canister; clockwise increases the value and counterclockwise decreases the value. The suction value will appear on the main display as a LIMIT value. See *Table 5 Suction Limit Ranges and Colors*.
T	**20-Liter Suction Control Dial** – Allows for the rotary adjustment of the suction LIMIT value of the 20-liter canister; clockwise increases the value and counterclockwise decreases the value. The suction value will appear on the main display as a LIMIT value. See *Table 5 Suction Limit Ranges and Colors*.
U	**Handle** – Allows for relocation and positioning of the rover.
V	**Manifold Holder** – Allows for the storage of new, unused manifolds.
W	**Power Cord Receptacle/Switch** – Allows for the connection and application of facility power to the rover.
X	**Serial Number Label** – Identifies the serial number information of the rover.
Y	**Specification Label** – Identifies the part number information of the rover. See *Section 14 Specifications*.
Z	**Power Cord Bracket** – Allows for the wrapping and storage of the supplied power cord.
AA	**Power Cord with Retainer** – The supplied power cord is used to connect the rover to facility power. The power cord has a locking feature and must be unlocked prior to disconnection from the rover. The retainer keeps the cord in place.
AB	**Casters (four)** – Four swivel casters provide mobility for the rover to roll across a floor. The two rear casters have locks to prevent unintended movement during operation.

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6.2 Software Interface

6.2.1 Safety Information Screens

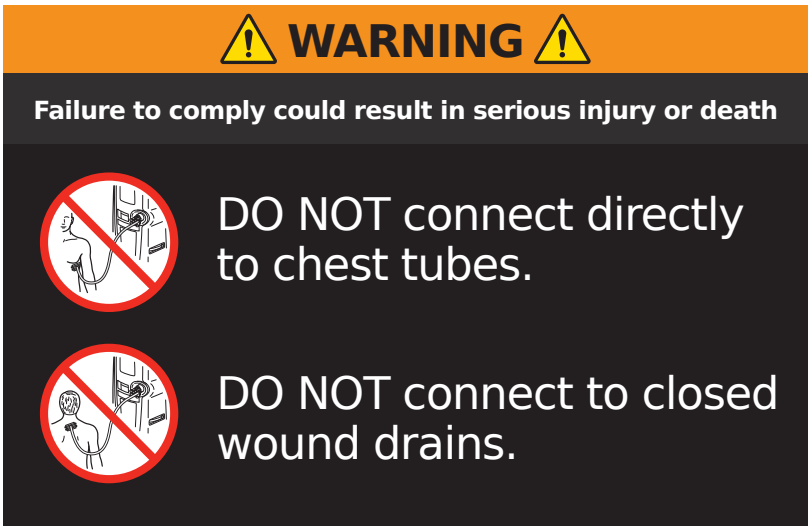
WARNING
Failure to comply could result in serious injury or death
DO NOT connect directly to chest tubes.
DO NOT connect to closed wound drains.

Figure 10 – Top Display WARNING Screen

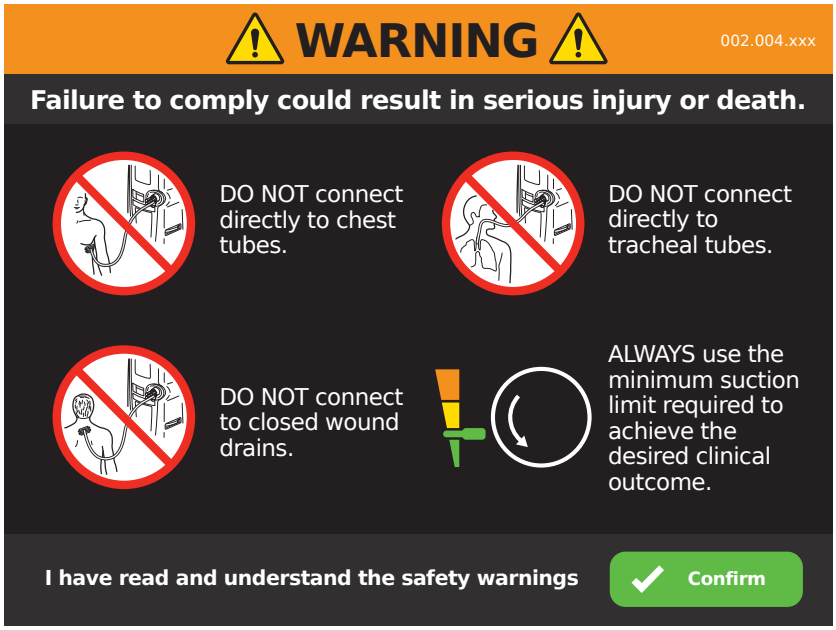
WARNING
002.004.xxx
Failure to comply could result in serious injury or death.
DO NOT connect directly to chest tubes.
DO NOT connect directly to tracheal tubes.
DO NOT connect to closed wound drains.
ALWAYS use the minimum suction limit required to achieve the desired clinical outcome.
I have read and understand the safety warnings
Confirm

Figure 11 – Main Display WARNING Screen

NOTE: The software version number appears in the upper right corner of the main display WARNING screen. Make sure the number on the screen matches the software version number on the cover of this instructions for use. If not, contact your Stryker sales representative or call Stryker Neptune Customer Service to obtain the latest instructions for use manual. See *Section 1.3 Contact Information*.

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6.2.2 Menu Structure

The main display control screen has a menu structure that provides access to the primary control functions (Figure 12).

NOTE: The Suction Units primary control function is for international customers only and will appear disabled for US customers.

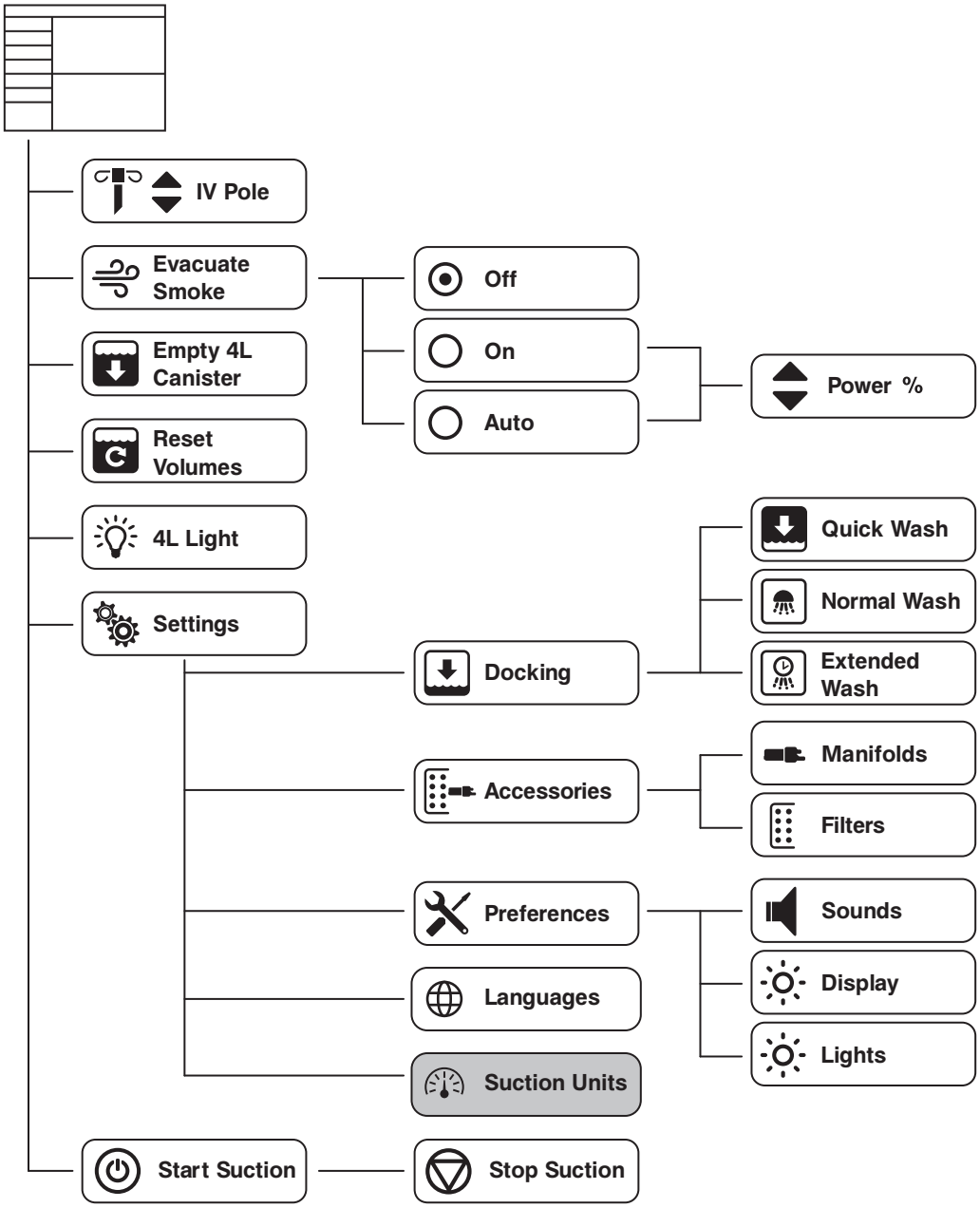

Figure 12 – Control Screen Menu Structure

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6.2.3 Screens, Dialogs, and Drop-downs

6.2.3.1 Main Display Control Screen Areas

Figure 13 – Roving Mode (Control) Screen

A	**Suction Control Area** – Provides a toggle button to control the presence or absence of fluid suction.
B	**Control Menu Area** – Provides buttons to control the primary functions of the rover (Figure 12).
C	**Notification Message Area** – Indicates when a low priority alarm condition has occurred (Figure 16); touch to access the drop-down list and/or message. See *Section 17 Glossary.*
D	**Error Message Area** – Indicates when a medium priority alarm condition has occurred; touch to access the drop-down list and/or message. See *Section 17 Glossary.*
E	**Canister Information Area (two)** – Identifies the specific canister; also provides fluid volume information via a 4L or 20L canister symbol and a fluid volume reading. If the canisters' volumes are reset, the words 'since last reset' will appear. See *Table 9 Canister Symbol Colors*.
F	**Suction Status Area (two)** – Indicates the suction status of a canister, including STOPPED, PAUSED, or HIGH.
G	**Manifold Indicator Area (two)** – Indicates the status of the manifold installed in the receptacle. Status conditions include new or used. See *Table 8 Manifold Symbol Colors*.
H	**Title Area** – Indicates status, including system setup, suction ON, suction OFF, EMPTYING 4-liter canister, and PREFILLING 4-liter canister. See *Section 17 Glossary* for the definition of prefilling.
I	**Suction Gauge Area (two)** – Indicates the suction selected with the rotary suction control dial, including OFF, LOW, MEDium, HIGH, or MAXimum. See *Table 5 Suction Limit Ranges and Colors*.
J	**Suction LIMIT Value Area (two)** – Indicates the selected suction limit value obtained by using the rotary suction control dial.
K	**ACTUAL Suction Value Area (two)** – Indicates the actual suction value present in the canister. The ACTUAL value may fluctuate and could be significantly lower than the suction LIMIT value.

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6.2.3.2 Typical Settings Dialog Areas

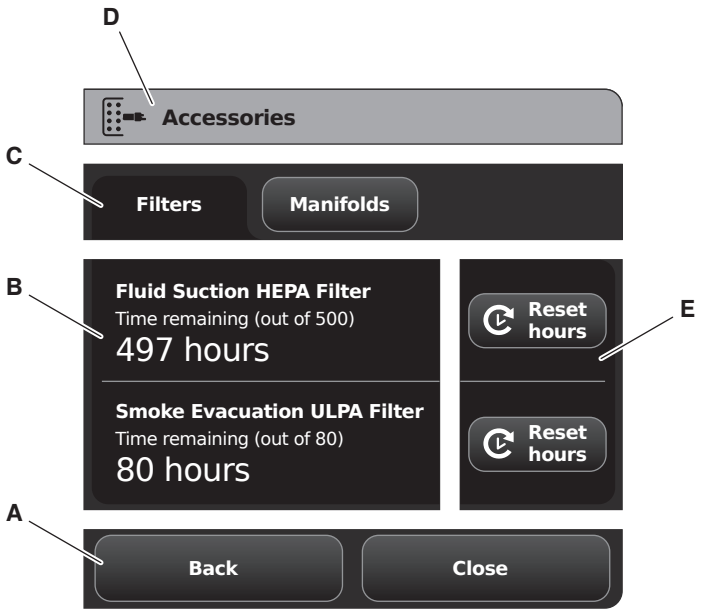

Figure 14 – Accessories Dialog

A	**Navigation Area** – Provides buttons used to return to the SETTINGS dialog menu or control screen.
B	**Options Area** – Provides options that may be adjusted, as well as default settings information or life-cycle use information.
C	**Tab Selection Area** – Provides selection tabs, including FILTERS, MANIFOLDS, SOUNDS, DISPLAYS, and LIGHTS.
D	**Title Area** – Indicates the name of the settings dialog, including DOCKING, ACCESSORIES, and PREFERENCES.
E	**Option Adjustment Area(s)** – Provides buttons used to adjust sound or brightness, reset hours, or select default settings. Also displays the number of manifolds used within the last 30 days and 90 days.

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6.2.3.3 Typical Docking Mode Screen Areas

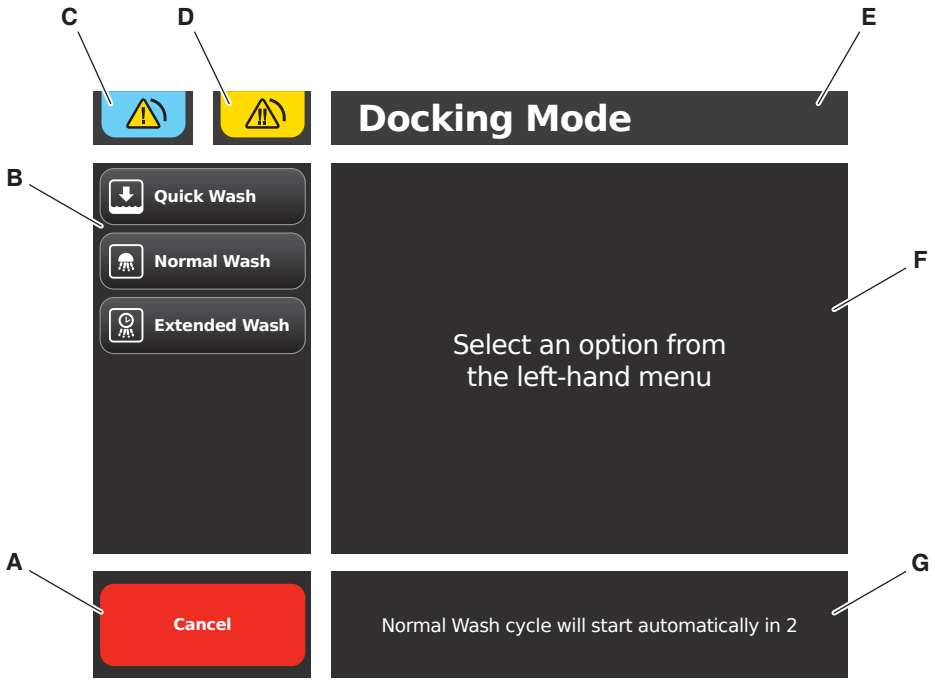

Figure 15 – Docking Mode Screen

A	**Cycle Control Area** – Allows for most control over cycle activity, including: ABORT TO QUICK WASH, CANCEL, and RELEASE FROM DOCKer after cycle completion. For additional cycle control information, see *Section 8.4.3.2 To Perform a Docking Cycle.*
B	**Cycle Options Menu** – Allows for the manual selection of a cycle. Manual selection will override the default cycle setting.
C	**Notification Message Area** – Indicates when a low priority alarm condition has occurred (Figure 16); touch to access the drop-down list and/or message.
D	**Error Message Area** – Indicates when a medium priority alarm condition has occurred; touch to access the drop-down list and/or message.
E	**Title Area** – Indicates the name of the screen.
F	**Status Area** – Provides instruction, identifies the type of cycle selected, and indicates the cycle status.
G	**Default Cycle Message Area** – Indicates when the default cycle will begin after the rover is connected to the docker. A selection from the cycle options menu may be made to override the default setting.

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6.2.3.4 Typical Notification or Error Drop-down Areas

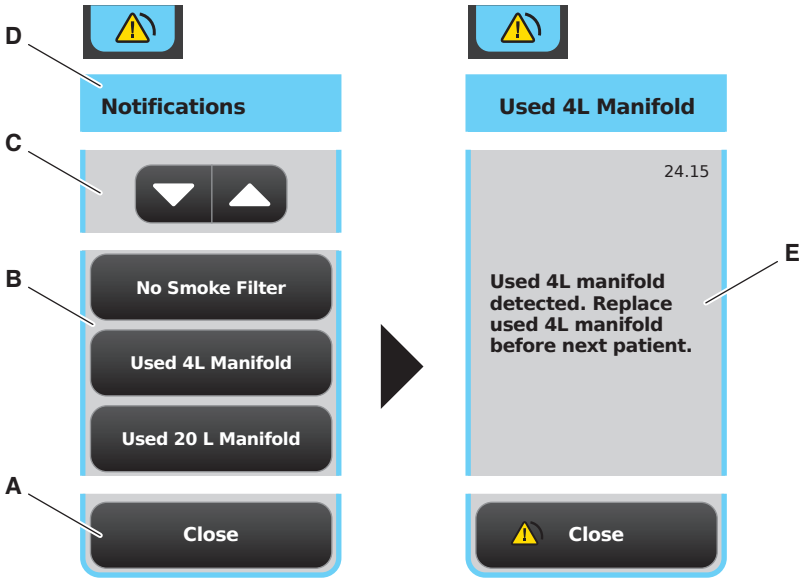

Figure 16 – Notification Drop-down

A	**Response Area** – Provides a CLOSE button to exit a notification or error drop-down.
B	**List Area** – Provides one or more notification message or error message buttons. Each button allows access to a specific message.
C	**Navigation Area** – Provides UP and DOWN buttons to scroll through a list of notification message or error message buttons.
D	**Title Area** – Identifies the type of message displayed, either notification or error.
E	**Message Area** – Provides specific notification or error message information.

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6.2.3.5 Top Display Screen Areas

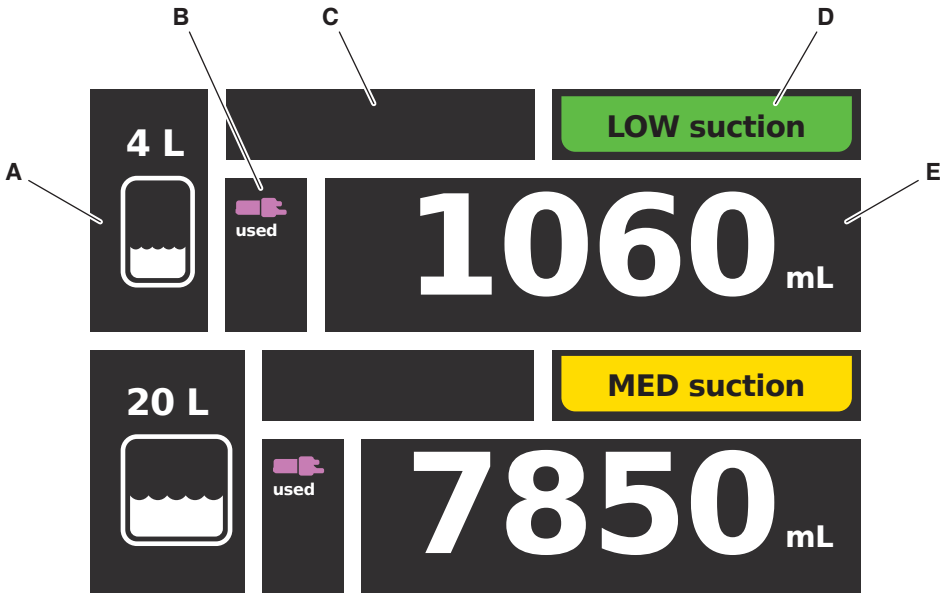

Figure 17 – Top Display Screen

A	**Canister Information Area (two)** – Identifies the specific canister; also provides graphical indication of total fluid volume collected via a 4L or 20L canister symbol. See *Table 9 Canister Symbol Colors*.
B	**Manifold Indicator Area (two)** – Indicates the status of the manifold installed in the receptacle. Status conditions include new or used. See *Table 8 Manifold Symbol Colors*.
C	**Fluid Volume Status Area (two)** – Indicates fluid volume status information of a specific canister. Conditions include: EMPTYING, PREFILLING, ALMOST FULL, FULL, or ERROR.
D	**Suction Status Area (two)** – Indicates the suction status of a canister, including STOPPED, PAUSED, LOW, MEDium, HIGH, or NO suction.
E	**Fluid Volume Area (two)** – Indicates the fluid volume value in milliliters of the specific canister.

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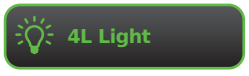
7 Definitions

Table 3 – Control Screen Buttons

This table defines the function of each button that appears on the control screen.

BUTTON	NAME	FUNCTION
	DOWN/DECREASE, UP/INCREASE	Touch and hold the DOWN or UP arrow button to decrease or increase the height of the powered IV pole, respectively. These buttons may also be used to decrease or increase values or scroll down or up through a list of options.
	EVACUATE SMOKE	Touch the button to access the EVACUATE SMOKE dialog; three modes of operation are available including OFF, ON, and AUTO. The power level of smoke evacuation may also be adjusted.
	EVACUATE SMOKE (ACTIVE)	When smoke evacuation is active, the smoke evacuation button displays the current smoke evacuation settings, including the mode and power level. Touch the button to make changes, as required.
	OFF OFF (ENABLED)	Touch the toggle button to enable or disable the OFF mode of smoke evacuation.
	ON ON (ENABLED)	Touch the toggle button to enable or disable the ON mode of smoke evacuation.
	AUTO AUTO (ENABLED)	Touch the toggle button to enable or disable the AUTO mode of smoke evacuation. In the AUTO mode, evacuation will increase to its set power value within five seconds of smoke detection. Evacuation will decrease to a 30% power value within 30 seconds of smoke cessation. The AUTO mode is not available unless a smoke evacuator ULPA filter is installed correctly.
	EMPTY 4L CANISTER	Touch the button to empty the contents of the 4-liter canister into the 20-liter canister. A CONFIRM dialog will appear. Suction is paused for about 30 seconds during the emptying process.
	RESET VOLUMES	Touch the button to reset the canisters' fluid volume values to zero. A CONFIRM dialog will appear.
	4-LITER CANISTER LIGHT	Touch the toggle button to turn ON or OFF the 4-liter canister light.
	4-LITER CANISTER LIGHT (ON)	
	SETTINGS	Touch the button to access the SETTINGS dialog menu with system options. Select and adjust the system settings, as required. See *Section 8.1.4 To Adjust the Rover Settings*.
	DOCKING	Touch the button to access the DOCKING dialog menu. Select a default cycle option to be performed automatically when the rover is connected to the docker.

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BUTTON	NAME	FUNCTION
	SET AS DEFAULT	From the DOCKING dialog menu, touch the button to select the default cycle to be performed when the rover is connected to the docker. The selected button will gray out and indicate DEFAULT CYCLE.
	ACCESSORIES	Touch the button to access the ACCESSORIES dialog. Select the FILTERS tab or the MANIFOLDS tab, as required.
	FILTERS	Touch the tab to access the FILTERS status information and RESET HOURS control.
	RESET HOURS	Touch the button to reset the hours of use associated with a newly installed filter to a zero value. ALWAYS reset the hours of use after the installation of a new fluid suction HEPA filter or a new smoke evacuator ULPA filter.
	MANIFOLDS	Touch the tab to access the MANIFOLDS status information.
	PREFERENCES	Touch the button to access the PREFERENCES dialog. Select the SOUNDS tab, the DISPLAY tab, or the LIGHTS tab, as required.
	SOUNDS	Touch the tab to access the SOUNDS status information and volume control. The volume or ‘loudness’ of audible indicators may be increased or decreased.
	DISPLAY	Touch the tab to access the DISPLAY status information and brightness control. The brightness of the top display and main display may be increased or decreased.
	LIGHTS	Touch the tab to access the LIGHTS status information and brightness control. The brightness of the 4L canister light and the manifold lights (suction range indicators) may be increased or decreased.
	LANGUAGES	Touch the button to access the LANGUAGES dialog menu with language options. Select the language, as required. This dialog menu will appear disabled if suction is ON.
	SUCTION UNITS	The Suction Units primary control function is for international customers only and will appear disabled for US customers.
	START SUCTION	Touch the toggle button to start fluid suction.
	STOP SUCTION	Touch the toggle button to stop fluid suction.
	CONFIRM	Touch the button to acknowledge understanding of important safety information or allow the performance of a critical and/or irreversible action.
	CANCEL	Touch the button to cancel the performance of a task or the responses to a dialog.

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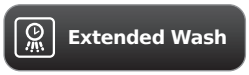
BUTTON	NAME	FUNCTION
	CLOSE	Touch the button to accept the responses of a dialog and exit or close a drop-down list.
	CLOSE NOTIFICATION MESSAGE	Touch the button to exit or close a notification message.
	CLOSE ERROR MESSAGE	Touch the button to exit or close an error message.
	BACK	Touch the button to exit and return to the previous screen.
	NOTIFICATION	Touch the button to access LOW PRIORITY alarm information. A drop-down list of one or more messages will appear.
	ERROR	Touch the button to access MEDIUM PRIORITY alarm information. A drop-down list of one or more messages will appear.
	QUICK WASH	Touch the button to select the QUICK WASH cycle option. A cycle description and when the cycle was last performed are provided.
	NORMAL WASH	Touch the button to select the NORMAL WASH cycle option. A cycle description and when the cycle was last performed are provided.
	EXTENDED WASH	Touch the button to select the EXTENDED WASH cycle option. A cycle description and when the cycle was last performed are provided.
	START	Touch the button to initiate the QUICK WASH cycle, the NORMAL WASH cycle, or the EXTENDED WASH cycle (Figure 46). See *Table 18 Docking Cycle Options*.
	CANCEL	Touch the button to stop docking and prepare the rover for release. The RELEASE FROM DOCKer button will appear.
	ABORT TO QUICK WASH	Touch the button to interrupt the NORMAL WASH or EXTENDED WASH cycle and initiate the QUICK WASH cycle. This option is only available during the early stages of the NORMAL WASH cycle or EXTENDED WASH cycle.
	RELEASE FROM DOCK(er)	Touch the button, available after the cycle is complete or a cancellation, to disconnect the rover from the docker.

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Table 4 – Symbols

This table defines the symbols located on the equipment and/or labeling. Also see the *Symbol Definition Chart* supplied with the equipment for more definitions.

SYMBOL	DEFINITION
	ON (POWER)
	OFF (POWER)
	POWERED IV POLE HEIGHT ADJUSTMENT
	DOWN/DECREASE
	UP/INCREASE
	EVACUATE SMOKE
	OFF
	ON
	EMPTY FOUR-LITER CANISTER
	RESET VOLUMES
	FOUR-LITER CANISTER LIGHT
	SETTINGS
	START SUCTION
	STOP SUCTION
4L	FOUR-LITER CANISTER
20L	TWENTY-LITER CANISTER
	MANIFOLD
	MANIFOLD INSTALLATION CHECK BOX
	CONFIRM
	CANCEL
	PREFILLING

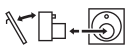
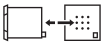
SYMBOL	DEFINITION
	DOCKING
	QUICK WASH
	NORMAL WASH
	EXTENDED WASH
	ACCESSORIES
	RESET HOURS
	PREFERENCES
	SOUND (VOLUME)
	BRIGHTNESS
	LANGUAGES
	SUCTION UNITS
	LOW PRIORITY ALARM
	MEDIUM PRIORITY ALARM
	REFER TO INSTRUCTION MANUAL/ BOOKLET
	GENERAL WARNING SIGN
	CONSULT INSTRUCTIONS FOR USE
	ALTERNATING CURRENT
	DIRECT CURRENT
	TYPE CF APPLIED PART
	PROTECTIVE EARTH (GROUND)
	NON-IONIZING ELECTROMAGNETIC RADIATION
	UNLOCK/LOCK
	FLUID SUCTION FILTER COMPARTMENT
	SMOKE FILTER COMPARTMENT

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Table 5 – Suction Limit Ranges and Colors

This table defines the suction limit range and associated color. Color indicators are shown on the top display, the main display, and by a suction range indicator above each manifold receptacle. See *Section 6 Features*.

COLOR	SUCTION LIMIT RANGE	VALUE (mm-Hg)	INCREMENTS (mm-Hg)
MAX Orange	MAXimum	520	Not Applicable
HIGH Orange	HIGH	120 to 520	20
MED Yellow	MEDium	80 to 115	5
LOW Green	LOW	50 to 75	5
OFF White	OFF	0	Not Applicable

Table 6 – Title Area Colors

This table defines the color used in the title area of the control screen.

COLOR	DEFINITION
Green	Indicates suction is ON
Gray	Indicates suction is OFF
White	Indicates suction is PAUSED

Table 7 – Button Colors

This table defines the color of buttons used on the control screen.

COLOR	DEFINITION
Green	Indicates a START or CONFIRM condition or function
Red	Indicates a STOP function

Table 8 – Manifold Symbol Colors

This table defines the color of the manifold symbol used on the control screen.

COLOR	DEFINITION
White	Indicates NEW manifold
Pink	Indicates USED manifold

Table 9 – Canister Symbol Colors

This table defines the color of the canister symbol used on the control screen.

COLOR	DEFINITION
White	Indicates fluid volume SINCE last reset
Grey	Indicates fluid volume BEFORE last reset
Blue	Indicates fluid volume ALMOST FULL
Yellow	Indicates fluid volume FULL

Table 10 – Message Area Colors

This table defines the color of the notification and error message areas used on the control screen.

COLOR	DEFINITION
Blue	Indicates LOW PRIORITY alarm
Yellow	Indicates MEDIUM PRIORITY alarm

Table 11 – Audible Event Indicators

This table describes the audible indicators associated with each type of system event.

TYPE	INDICATION	TRIGGER
Initial Startup	Chime tone	Startup screen with progress bar
Button Touch	Click tone	Main display button actuation
Task Complete	Ding tone	Valid manifold installed successfully
Notification	Two declining tones	Any LOW PRIORITY alarm
Error	Three slow tones, three times	Any MEDIUM PRIORITY alarm

NOTE: See *Table 16 High Suction Visual and Audible Indicators* and *Table 17 Fluid Volume Indicators*.

Table 12 – Abbreviations

This table defines abbreviations used in this manual and on the equipment.

NAME	DEFINITION
HEPA	High Efficiency Particulate Air
IR	Infrared wavelength light
IV	Intravenous
LED	Light emitting diode
mL	Milliliters
mm-Hg	Millimeters of mercury
OR	Operating room
ULPA	Ultra Low Penetration Air

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8 Instructions

8.1 Before First Use

8.1.1 To Unpack the Rover

WARNINGS:

- **LIFT HAZARD:** ALWAYS have more than one person unpack and remove this equipment from the shipping pallet. See *Section 14 Specifications* for rover weight. Failure to comply may result in personal injury.
- Upon initial receipt, inspect each component for damage. DO NOT use any equipment if damage is apparent or the inspection criteria are not met. See *Table 19 Inspection Schedule and Criteria*.

1. Remove the exterior packaging materials from the rover and recycle the material as required.
2. Using at least two people, remove the rover from the shipping pallet.
3. Inspect the rover and components for damage. If damage is apparent, DO NOT use the equipment.
4. Make sure all of the components are provided. See *Table 13 Components Supplied with Rover*. If any component is missing, see *Section 1.3 Contact Information*.

Table 13 – Components Supplied with Rover

COMPONENTS	REF
Symbol Definition Chart	0036-716-000
Fluid Suction HEPA Filter	0702-034-000
Power Cord	0703-001-001
Instructions For Use (IFU)	0703-001-700
Neptune 3 Software License Addendum	0703-001-701
Docking Station Instructional Poster	9100-003-353

8.1.2 To Add Canister Prefill Fluid

NOTE: Before the rover may be tested and placed into use, initial docking is required. Initial docking will add prefill fluid to the canisters. See *Section 8.4.3 To Dock the Rover*. Failure to comply will result in prefill errors and prevent the rover from operating properly. See *Section 17 Glossary* for definition of prefill fluid.

8.1.3 To Test the Rover

8.1.3.1 To Connect Power to the Rover

1. Connect the rover to facility electrical power using the supplied power cord. Insert the plug of the power cord through the strain relief hole before connecting the power cord to the rover (Figure 18). The power cord plug has a latched release button to prevent unintended removal from the rover power receptacle.
2. Push the power switch to the ON position.
3. Read the safety information on the control screen, then touch the CONFIRM button.

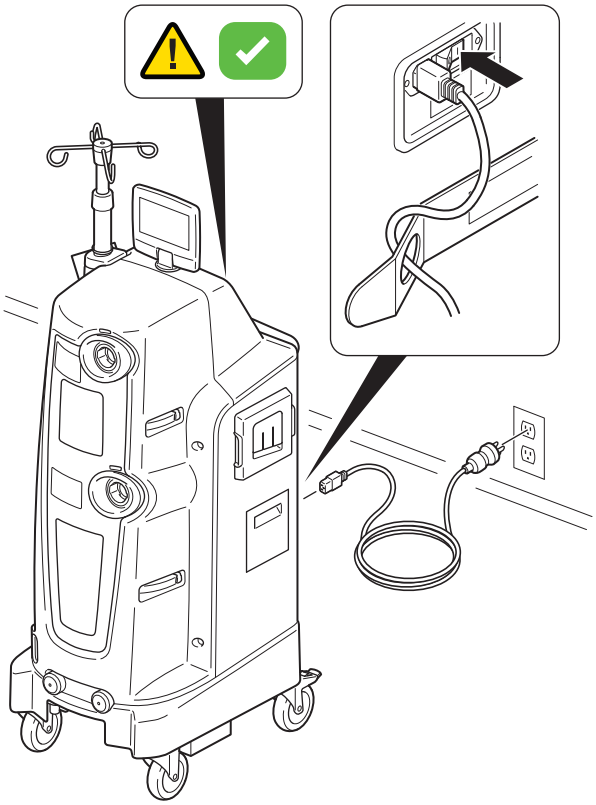

Figure 18 – To Connect Power

8.1.3.2 To Test Fluid Suction

NOTES:

- A SET UP SYSTEM screen will appear (Figure 19) after confirmation of the safety information (Figure 11). A valid manifold must be installed into the manifold receptacle to enable suction control.
- If the manifold is valid and installed correctly, a ‘task complete’ audible indicator will occur, the manifold suction indicator will illuminate white or pink, and the START SUCTION button will be enabled.

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- See *Section 17 Glossary* for the definitions of a new, valid, used, expired, and invalid manifold.

1. Insert a new (valid) manifold into the manifold receptacle of the canister to be tested.
2. Fully rotate the manifold clockwise to lock the manifold into the manifold receptacle.
3. Make sure all the inlet ports of the manifold are closed.
4. Push the START SUCTION button (Figure 20). Make sure suction starts. If not, see *Section 13 Troubleshooting.*
5. Adjust the suction control dial of the canister to be tested to the maximum suction level.
6. Verify the actual suction value displayed on the control screen (Figure 13) changes and reaches a suction level of at least 494 mm-Hg. If not, see *Section 13 Troubleshooting*.
7. Repeat this procedure to test the other canister.
8. Discard the manifold used for testing purposes.

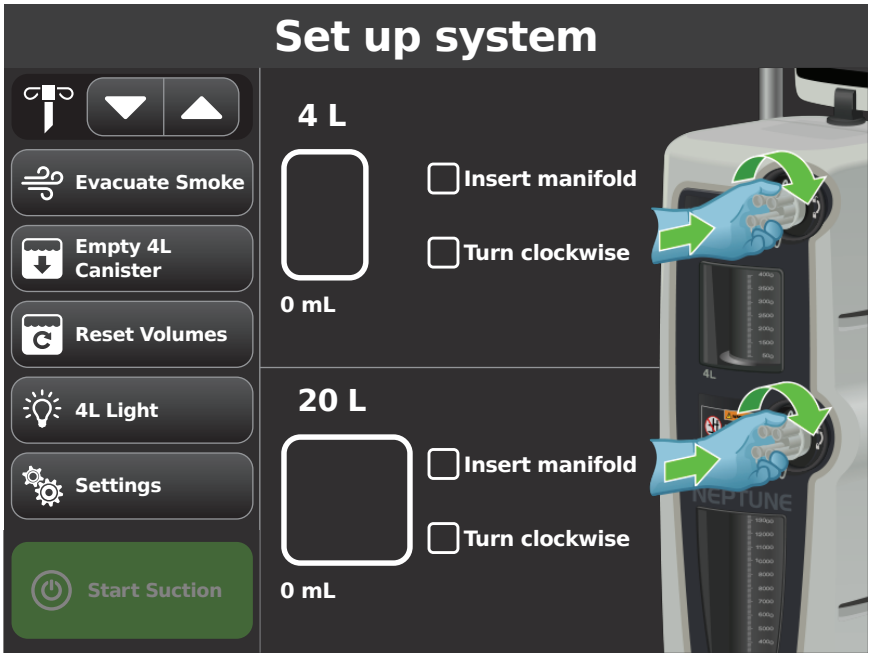

Figure 19 – Set Up System Screen

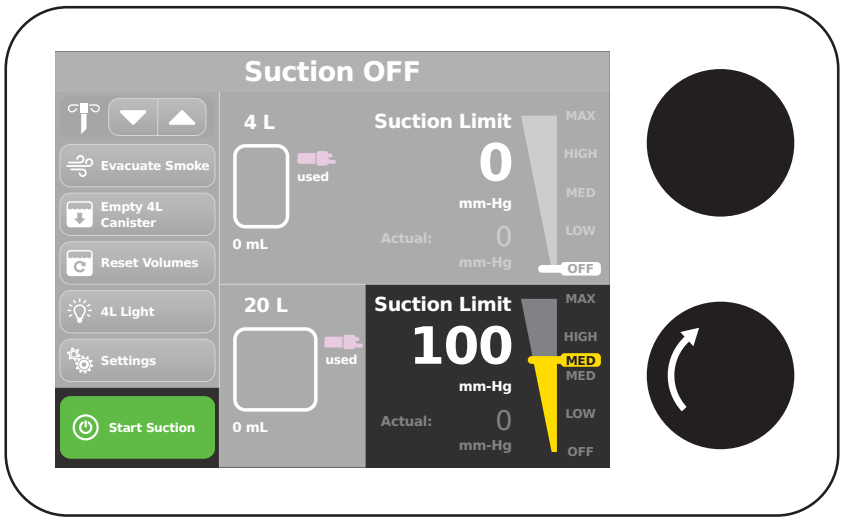

Figure 20 – To Start and Adjust Fluid Suction

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8.1.3.3 To Test IV Pole Height Adjustment

From the control screen menu, touch and hold the IV Pole UP and DOWN arrow buttons to raise and lower the IV pole, respectively (Figure 21). Make sure the height of the IV pole increases and decreases correctly. If not, see *Section 13 Troubleshooting*.

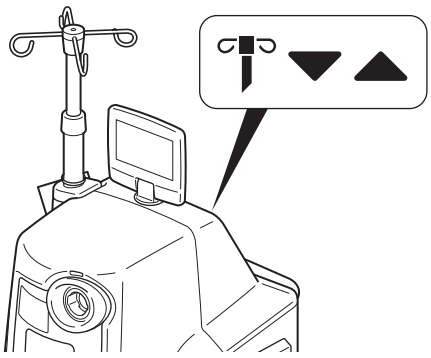

Figure 21 – To Test the Powered IV Pole

8.1.3.4 To Test Smoke Evacuation

NOTES:

- Make sure a smoke evacuator ULPA filter is installed in the rover before testing smoke evacuation. See *Section 5.3 For Use With*. See the *instructions for use* supplied with the smoke evacuator filter for installation information.
- See *Section 8.1.4 To Adjust the Rover Settings* to reset the hours of use of a newly installed smoke evacuator filter.
- The rover monitors the use and life expectancy of the smoke evacuator filter. DO NOT relocate the smoke evacuator filter after initial installation into the rover.
- See *Table 14 Smoke Evacuator Modes of Operation* for mode descriptions. Make sure the ON or AUTO mode is selected.

Table 14 – Smoke Evacuator Modes of Operation

MODE	DESCRIPTION
OFF	Stops smoke evacuator operation.
ON	Evacuates continuously at the specified power setting whether smoke is present or not.
AUTO	Increases smoke evacuation to the specified power setting when smoke is detected. If smoke is not detected, the smoke evacuator will operate at a 30% power setting automatically.

1. Touch the EVACUATE SMOKE button. The EVACUATE SMOKE dialog will appear (Figure 22).
2. While in the ON mode, touch the UP or DOWN buttons to increase or decrease the smoke evacuator power setting, as required.
3. Verify smoke evacuation power can be adjusted correctly. If not, see *Section 13 Troubleshooting*.
4. After testing, touch the OFF button to turn off the smoke evacuator; then touch the CLOSE button.

Figure 22 – Evacuate Smoke Dialog

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8.1.4 To Adjust the Rover Settings

1. Make sure the supplied power cord is connected between the rover and facility power.
2. Make sure the power switch is ON and the safety information on the main display has been read and understood (CONFIRM button).
3. From the control screen menu, touch the SETTINGS button. The SETTINGS dialog menu will appear (Figure 23).
4. From the SETTINGS dialog menu, touch the desired settings option button.

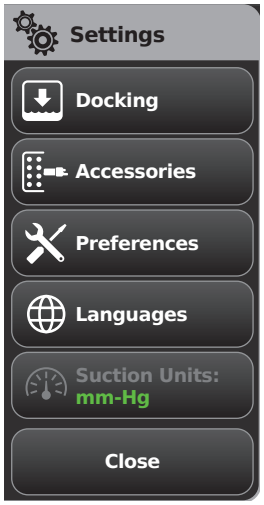

Figure 23 – Settings Menu Dialog

5. From a typical SETTINGS dialog, such as the PREFERENCES dialog, touch the appropriate tab to select or adjust an option (Figure 24). See *Table 15 Rover Settings Options*.
6. Touch the CLOSE button to accept any selection or adjustment and exit the dialog. Touch the BACK button to cancel any selection or adjustment and exit the dialog.

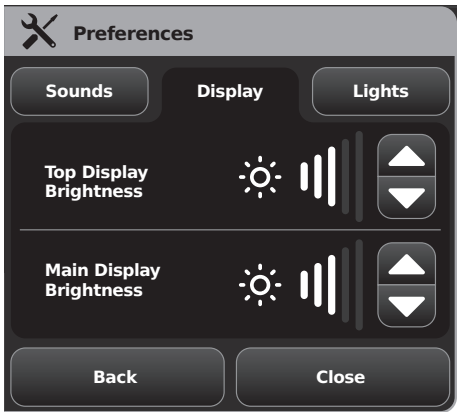

Figure 24 – Preferences Dialog

Table 15 – Rover Settings Options

DOCKING	OPTIONS
Quick Wash	Set As Default
Normal Wash	Set As Default
Extended Wash	Set As Default

ACCESSORIES	OPTIONS
Filters	Reset Hours
Manifolds	Not Applicable

PREFERENCES	OPTIONS
Sounds (Loudness)	
Audible Indicators	1 - 5
Display (Brightness)	
Top Display	1 - 5
Main Display	1 - 5
Lights (Brightness)	
4L Canister Light	1 - 5
Manifold Lights (Suction Range Indicators)	1 - 5

LANGUAGES	OPTIONS
English	Set As Default
French	Français
Spanish	Español
German	Deutsch
Italian	Italiano
Portuguese	Português
Dutch	Nederlands
Finnish	Suomi
Swedish	Svenska
Norwegian	Norsk
Danish	Dansk
Polish	Polskie
Chinese	中文
Japanese	日本語
Turkish	Türkçe
Korean	한국어

SUCTION UNITS	OPTIONS
mm-Hg	Set As Default

NOTE: After adjusting the rover settings, push power switch to OFF, disconnect the rover from facility power, and wrap the power cord around the power cord bracket. The rover is now ready for use.

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8.2 Before the Procedure

8.2.1 To Prepare the Rover

WARNINGS:

- Before each use, inspect each component for damage. DO NOT use any equipment if damage is apparent or the inspection criteria are not met. See *Table 19 Inspection Schedule and Criteria*.
- DO NOT use the rover until it is tested properly to ensure functionality. See *Section 8.1.3 To Test the Rover*.
- ALWAYS clean and disinfect the equipment as indicated upon initial receipt and before each use. See *Section 10 Cleaning and Disinfection*.
- DO NOT place the rover within the sterile field. Failure to comply may cause infection and result in patient or healthcare staff injury.

CAUTIONS:

- DO NOT clamp or attach any component or accessory onto the pole or base of the powered IV pole assembly.
- ALWAYS use the correct power cord configuration. Configurations will vary based on local requirements. See *Section 5.3 For Use With*.

NOTES:

- DO NOT use the rover until the docker is installed and tested properly to ensure functionality. See the *instructions for use* supplied with the docker.
- The volume of the initial prefill fluid in the canister(s) is accounted for in the fluid level value indicated on the top display. Foam does not affect this fluid level value.
- ALWAYS close unused manifold ports, and remove or clamp unused tubing to maintain optimal suction levels. The suction level in each canister is affected by the suction demand on the other canister.
- If the 4-liter or 20-liter suction limit is in the high suction range, the rover will provide an audible and visual indication of this condition. See *Table 16 High Suction Visual and Audible Indicators*.

1. Position the rover on a flat surface and in a convenient location within the operating room environment (Figure 25).
2. Lock the rover's two rear casters to prevent unintended rover movement.
3. Orient the position of the top display for optimal viewing.
4. Open the canister viewing doors from each side of the rover to allow viewing of the contents, if desired.
5. Connect the rover to facility electrical power using the supplied power cord.
6. Push the power switch to the ON position.

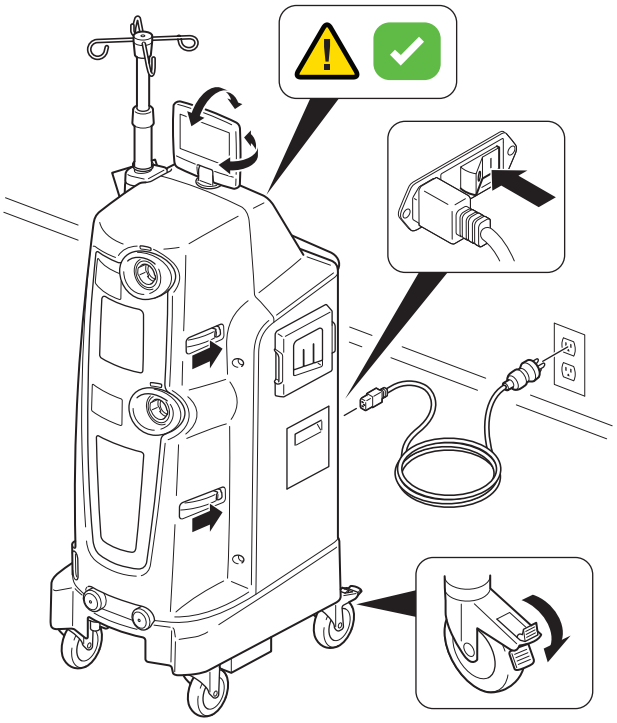

Figure 25 – To Connect Power

7. From the control screen, read the safety information; then touch the CONFIRM button. A SET UP SYSTEM screen will appear.

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8.2.2 To Install Disposable Components

NOTES:

- The fluid suction tubing and suction accessory are applied parts. See *Section 17 Glossary*.
- If the manifold is valid and installed correctly, a 'task complete' audible indicator will occur, the manifold suction indicator will illuminate white or pink, and the START SUCTION button will be enabled.
- See *Section 17 Glossary* for the definitions of a new, valid, used, expired, and invalid manifold.

8.2.2.1 To Prepare for Fluid Suction

1. While aligning the tabs, insert a new (valid) manifold(s) into the manifold receptacle(s) (Figure 26).
2. Fully rotate the manifold(s) clockwise to lock into the manifold receptacles. See the *instructions for use* supplied with the manifold.
3. Attach the fluid suction tubing to the port(s) of the installed manifold(s). ALWAYS close unused manifold ports.
4. Attach a fluid suction accessory to the end of the suction tubing, if desired.

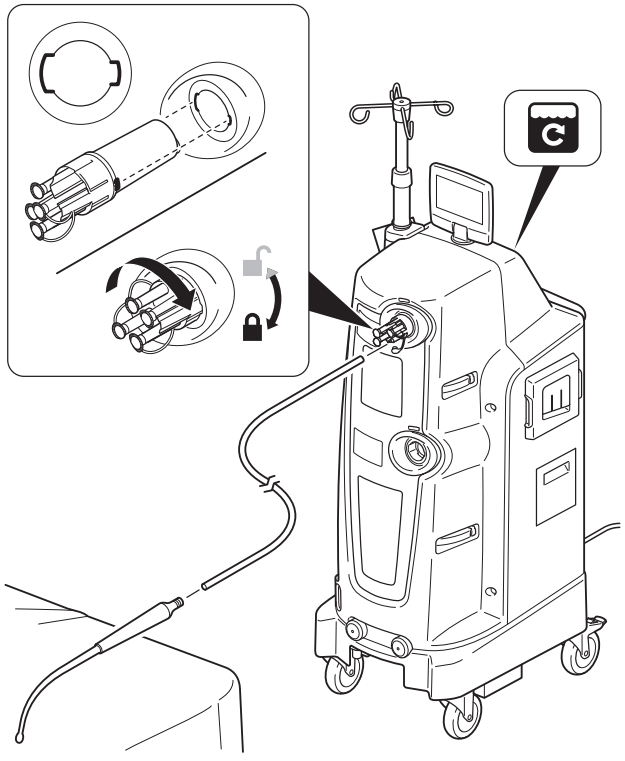

Figure 26 – To Prepare for Fluid Suction

5. From the control screen, touch the RESET VOLUME button to reset the fluid volume value of each canister to zero milliliters, if required. A CONFIRM dialog will appear (Figure 27) if the button is selected. Touch the CONFIRM button to make the change.

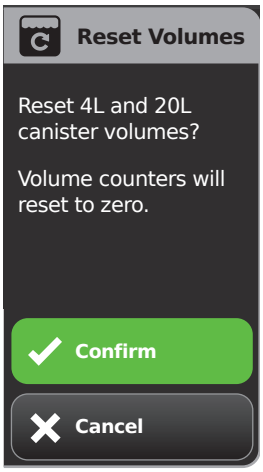

Figure 27 – Reset Volumes Dialog

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8.2.2.2 To Prepare for Smoke Evacuation

NOTES:

- Make sure a smoke evacuator filter is installed in the rover before using smoke evacuation. See *Section 5.3 For Use With*. See the *instructions for use* supplied with the smoke evacuator filter for installation information.
- The smoke evacuator tubing and optional smoke evacuator attachment are applied parts. See *Section 17 Glossary* for the definition of applied part.

1. Install the smoke evacuator tubing to the smoke evacuator filter (Figure 28).
2. Install a smoke evacuator attachment to the end of the smoke tubing, if desired.
3. Adjust smoke evacuator power as required. See *Section 8.1.3.4 To Test Smoke Evacuation*.

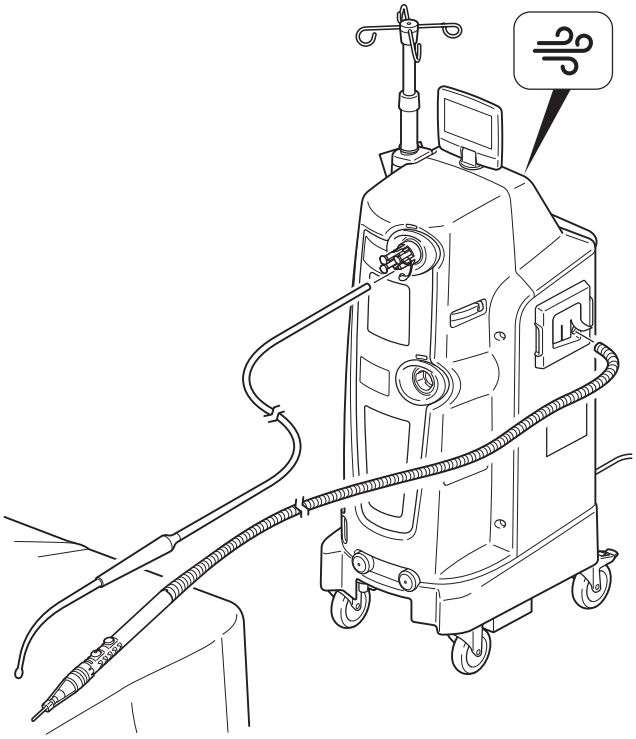

Figure 28 – To Prepare for Smoke Evacuation

8.2.2.3 To Prepare the IV Pole

NOTE: The powered IV pole will return to its lowest position automatically when power is removed from the rover.

1. Hang only one fluid bag per IV pole hook, if required (Figure 29). The maximum volume allowed on each IV pole hook is 3000 mL.
2. From the control screen menu, touch and hold the IV pole UP arrow button to raise the fluid bag(s) to the desired height.

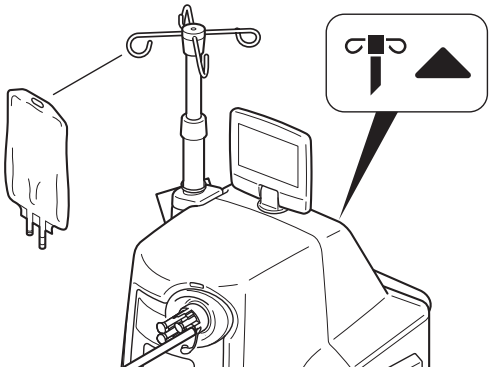

Figure 29 – To Use the Powered IV Pole

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8.3 During the Procedure

8.3.1 To Operate the Rover

WARNINGS:

INAPPROPRIATE CONNECTION HAZARD

- DO NOT connect directly to chest tubes.
- DO NOT connect to closed wound drains.
- DO NOT connect directly to tracheal tubes.
- NOT FOR USE as a suction source for:
  - Intermittent suction applications
  - Patient positioner devices
  - Organ stabilizer/positioner devices

Death or serious injury can result from inappropriate connections.

HIGH SUCTION HAZARD [MAX = 520 mm-Hg]

- The effectiveness of aspiration is dependent upon the intensity of the suction applied.
- ALWAYS use the minimum suction limit range required to achieve the desired clinical outcome.
- ALWAYS follow your institution's guidelines for suction limits.
- The suction limit range of each collection canister may be adjusted by the appropriate suction control dial on the control panel. Interruption and restoration of rover power while suction is ON, whether accidental or intentional, does not reset the suction limit range to zero. See *BS EN ISO 10079-1: 2009, clause 13.8*. Use caution when activating suction with a high suction limit range.

Death or serious injury can result from the improper application of suction levels.

- The collection canister scale, top display, and main display are not diagnostic tools. DO NOT use the scale or either display to determine the amount of fluid lost from or retained by the patient.
- ALWAYS make sure rover power is ON when collecting fluid waste. The rover can only detect full canisters if the rover power is ON. If the rover power is OFF, fluid waste leakage can occur.

NOTES:

- This equipment provides an adjustable suction limit of 50 to 520 mm-Hg measured with all manifold inlet ports closed.
- Make sure the rover has been properly prepared for operation. See *Section 8.2.1 To Prepare the Rover*.
- To reset the fluid level value to zero, touch the RESET VOLUME button on the control screen menu. Both canister fluid level values will reset to a zero value.

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8.3.1.1 To Control Fluid Suction

NOTE: See *Table 16 High Suction Visual and Audible Indicators* for important condition, indication, and action information.

1. While viewing the suction gauge on the main display, turn the appropriate suction control dial to adjust the suction limit in the associated canister (Figure 30).
2. Touch the START SUCTION button to start fluid suction (Figure 30).

Table 16 – High Suction Visual and Audible Indicators

This table describes the action to take when a high suction setting is selected for one or both canisters.

CONDITION	INDICATION	ACTION
HIGH suction limit RANGE – The suction limit range selected is equal to or greater than 120 mm-Hg.	Two declining tones; orange HIGH suction banner appears for appropriate canister on the top display and main display; suction range indicator illuminates orange for associated canister.	Determine whether a high suction range is desired.

8.3.1.2 To Control Smoke Evacuation

CAUTION: DO NOT use the smoke evacuator to evacuate or suction surgical fluid. Excessive amounts of fluid pulled into the smoke evacuator may cause equipment damage.

See *Section 8.1.3.4 To Test Smoke Evacuation* to control smoke evacuation.

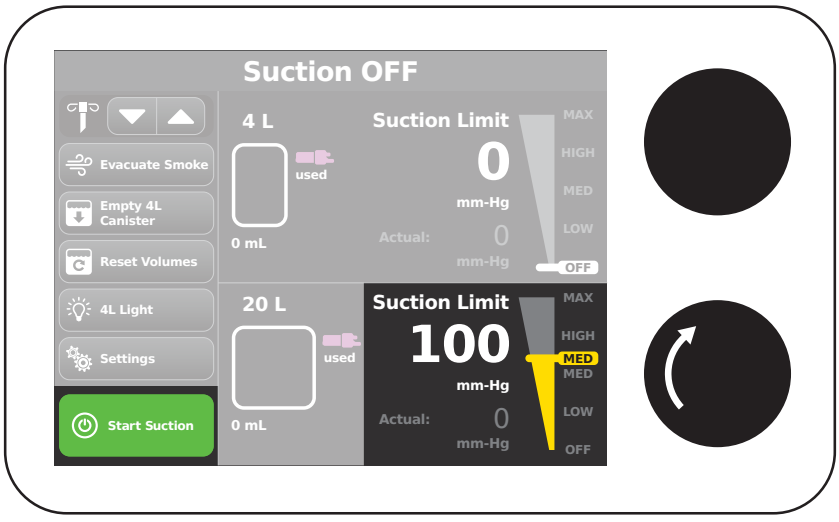

Figure 30 – To Start and Adjust Fluid Suction

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8.3.1.3 To Manage a Full Canister

Table 17 – Fluid Volume Indicators

CONDITION	INDICATION	ACTION
CANISTER ALMOST FULL – The fluid volume level is near full capacity. Fluid suction will soon stop in the full canister.	Two declining tones; ALMOST FULL notification drop-down appears on main display; blue ALMOST FULL banner appears on top display; canister icon appears blue on both displays (Figure 31).	Prepare to switch to an alternate suction source.
CANISTER FULL – The fluid volume level is at full capacity. Fluid suction has stopped in the full canister.	Three slow tones occur continuously; FULL WARNING drop-down appears on the main display; yellow SUCTION STOPPED banner appears on main display; yellow FULL banner appears on top display; canister icon appears yellow on both displays (Figure 32).	If the 20-liter canister can receive the contents of the 4-liter canister, touch the EMPTY 4L CANISTER button.
		Switch to an alternate suction source.
		Dock the rover to dispose of waste. See *Section 8.4.3 To Dock the Rover.*

NOTES:

- A maximum of three EMPTY 4L CANISTER cycles are allowed between docking cycles. The number of EMPTY 4L CANISTER cycles remaining is shown on the EMPTY 4L CANISTER dialog.
- The fluid volume values shown on the top display and main display will change after the EMPTY 4L CANISTER action is complete.
- Prefill fluid is added to the 4L canister after the EMPTY 4L CANISTER action is complete. The sound of the pump adding prefill fluid is normal.
- The 4-liter and 20-liter canisters will return to their previous suction limit ranges after the EMPTY 4L CANISTER action is complete.
- If the 20-liter canister has insufficient capacity to receive the 4-liter canister fluid, an ERROR dialog will appear indicating the rover will require shutdown and docking to empty its full canisters.

Figure 31 – Almost Full Canister Condition

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Figure 32 – Full Canister Condition

WARNING: SUCTION LOSS – Suction is lost in both canisters for at least 30 seconds during the EMPTY 4L CANISTER operation. Make sure the loss of suction will not compromise patient safety.

If a 4-liter full canister condition occurs, perform one of the following three options:

1. If the 20-liter canister can receive the contents of the 4-liter canister, touch the EMPTY 4L CANISTER button. An EMPTY 4L CANISTER dialog will appear (Figure 33). Touch the CONFIRM button if the loss of suction will not compromise patient safety.

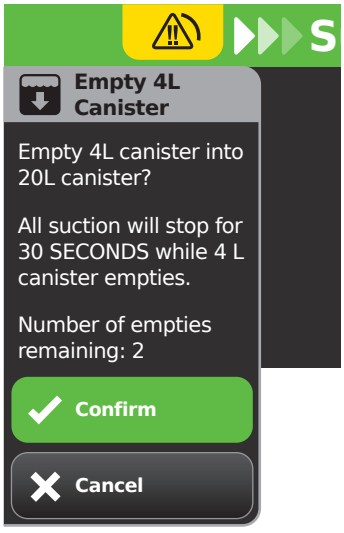
Empty 4L Canister
Empty 4L canister into 20L canister?
All suction will stop for 30 SECONDS while 4 L canister empties.
Number of empties remaining: 2
Confirm
Cancel

Figure 33 – Empty 4-Liter Canister Dialog

NOTE: Status of the emptying and prefilling of the 4-liter canister will be shown on the control screen (Figure 34 and Figure 35).

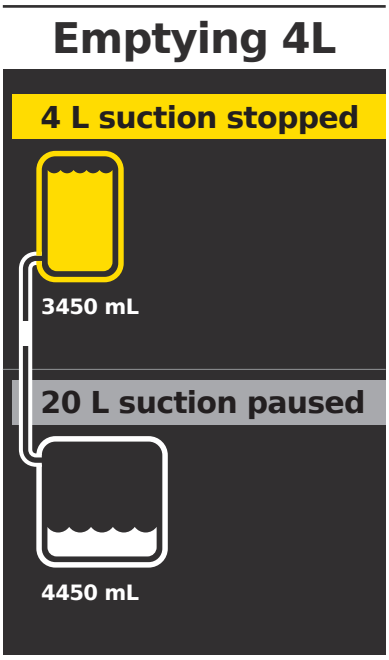

Figure 34 – Emptying 4-Liter Canister Screen

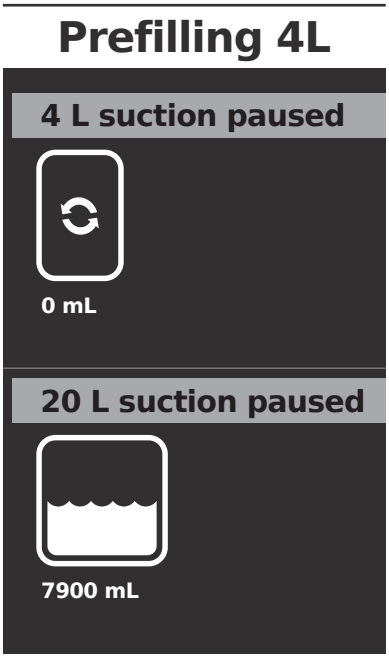

Figure 35 – Prefilling 4-Liter Canister Screen

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2. If another available canister is not is use and has sufficient capability to receive fluid, relocate the manifold to the available canister (Figure 36).

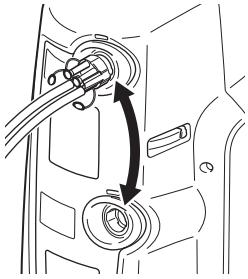

Figure 36 – To Relocate the Manifold

3. If the 20-liter canister is full, shut down the rover for docking. See *Section 8.4.1 To Remove Disposable Components* and *Section 8.4.2 To Shut Down and Relocate the Rover*. Dock the rover to empty the full canister(s). See *Section 8.4.3 To Dock the Rover*.

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8.4 After the Procedure

8.4.1 To Remove Disposable Components

WARNING: BLOODBORNE PATHOGEN HAZARD

- ALWAYS wear PPE when operating or handling this equipment.
- ALWAYS leave tubing attached to the manifold and close unused ports during disposal.
- ALWAYS follow local regulations regarding proper handling and disposal of biohazard waste.

Failure to comply may cause infection and result in healthcare staff injury.

NOTES:

- Although the disposable, single-use manifold(s) and suction tubing must be replaced between patients, it may not be necessary to empty the contents of the rover's collection canisters.
- If sufficient fluid volume capacity exists in one or both canisters, the rover may be used for additional surgical procedures.

8.4.1.1 To Remove Suction Components

1. With suction active, gather the suction tubing toward the manifold port to purge the tubing of fluid waste. DO NOT remove any attached suction tubing from the manifold (Figure 37).
2. From the control panel, turn the suction control dial to zero for the canister with the manifold to be removed (Figure 38).
3. From the control screen, touch the STOP SUCTION button to stop fluid suction.
4. Rotate the manifold counterclockwise within the receptacle until it is unlocked, then pull the manifold and attached suction tubing out of the receptacle, always maintaining the manifold in a horizontal orientation (Figure 39).
5. Properly dispose of the used manifold and attached suction tubing always maintaining the manifold in a horizontal orientation.
6. Remove all the remaining fluid suction accessories as required.

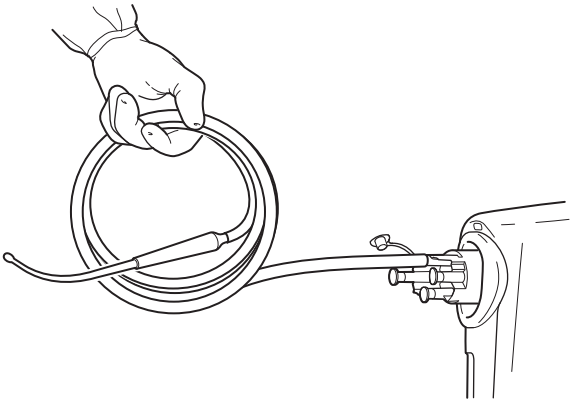

Figure 37 – To Gather Suction Components

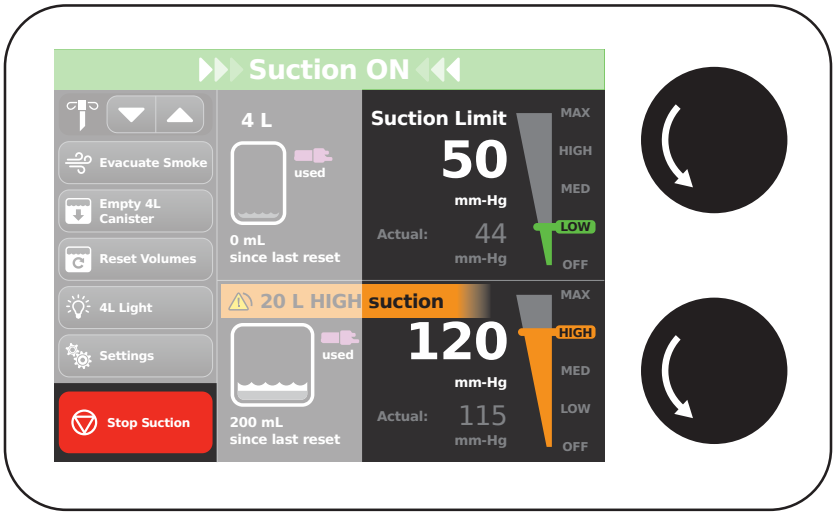

Figure 38 – To Discontinue Fluid Suction

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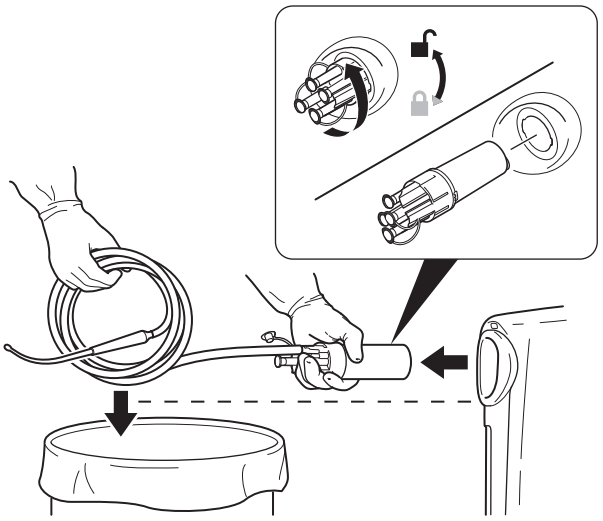

Figure 39 – To Dispose of Suction Components

8.4.1.2 To Remove Evacuator Components

1. From the control screen, touch the EVACUATE SMOKE button. From the EVACUATE SMOKE dialog, touch the OFF button to stop smoke evacuation.
2. Gather the smoke evacuator tubing with any connected attachments toward the smoke evacuator filter. Remove the tubing and any connected attachment from the smoke evacuator filter (Figure 40).
3. Properly dispose of the used smoke evacuator tubing and any connected attachment.

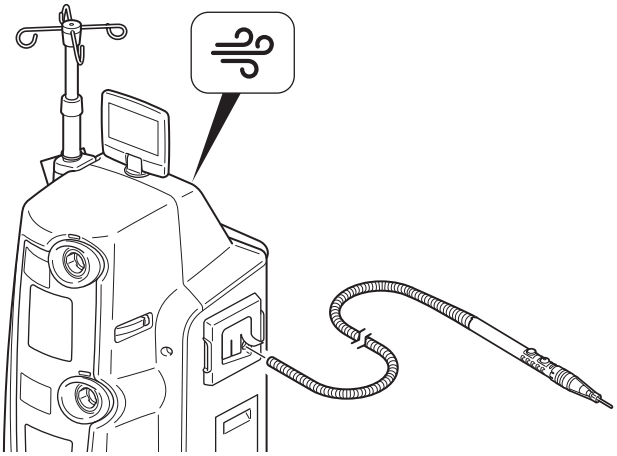

Figure 40 – To Remove Evacuator Components

8.4.1.3 To Remove Fluid Bag(s)

1. From the control screen menu, touch and hold the IV pole DOWN button to lower the fluid bag(s). To automatically lower the powered IV pole, push the power switch to the OFF position (Figure 41).
2. Remove all fluid bag(s) from the IV pole hooks.

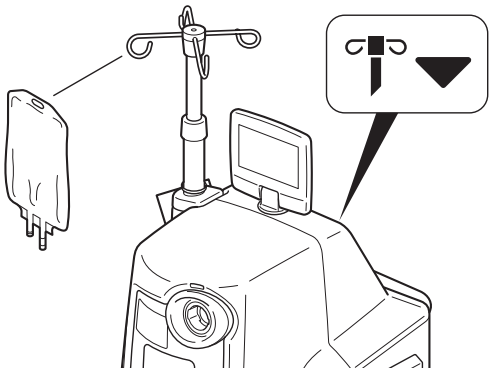

Figure 41 – To Remove Fluid Bag(s)

8.4.2 To Shut Down and Relocate the Rover

8.4.2.1 To Remove Power From the Rover

1. Push the power switch to the OFF position (Figure 42).
2. Disconnect the power cord of the rover from facility electrical power. Wrap the power cord around the cord bracket.

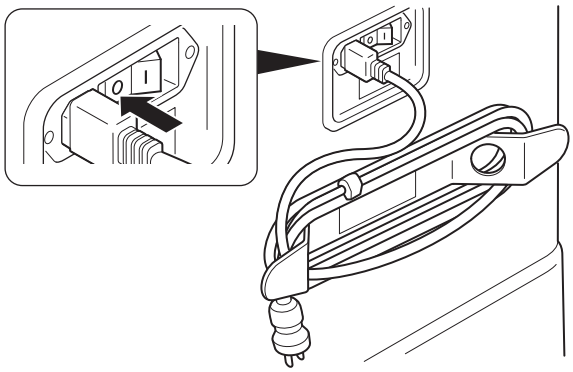

Figure 42 – To Remove Power

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8.4.2.2 To Prepare the Rover for Relocation

CAUTION: ALWAYS remove power from the rover before relocation to make sure the powered IV pole is at its lowest position. Failure to comply may result in IV pole damage.

NOTE: Before relocation, remove all fluid bags from the rover (Figure 43).

1. Using the handles, close the canister viewing doors to conceal the canister contents.
2. ALWAYS wipe down the rover between each surgical use. See *Section 10 Cleaning and Disinfection*.
3. Unlock the two rear casters of the rover.

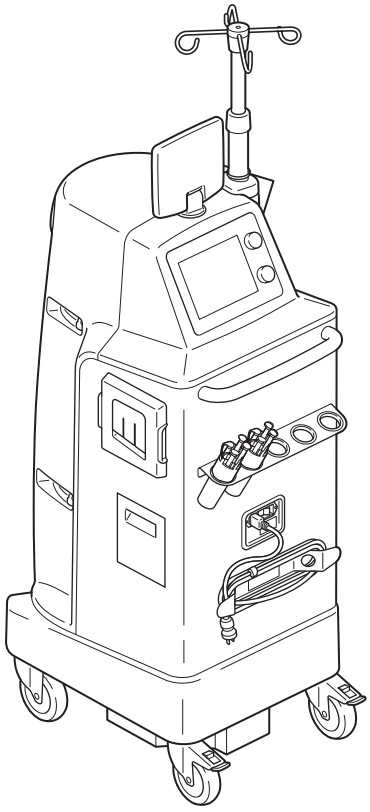

Figure 43 – Transport Configuration

8.4.2.3 To Relocate the Rover

1. If both canisters are full or the rover contains fluid waste and will not be used within two hours, relocate the rover to the docker using the rover handle. See *Section 8.4.3 To Dock the Rover*.
2. If the canisters are not full and the rover will be used within two hours, relocate the rover to the desired location using the rover handle. See *Section 8.2.1 To Prepare the Rover*.

NOTES:

- ALWAYS use the rover handle when repositioning or relocating the rover.
- Dock the rover for waste disposal as soon as possible, typically within two hours of the last use, to preclude extended wash cycles.
- The rover is not required to be connected to facility power when not in use.

8.4.3 To Dock the Rover

⚠ WARNINGS:

PINCH POINT HAZARD

ALWAYS keep hands out and away from the mating surfaces of the rover and docker during the docking procedure.

BLOODBORNE PATHOGEN HAZARD

- ALWAYS wear PPE when operating or handling this equipment.
- ALWAYS follow local regulations regarding proper handling and disposal of biohazard waste.

Failure to comply may cause infection and result in healthcare staff injury.

NOTES:

- Before docking the rover, always allow the docker to initiate for at least 60 seconds after applying power to the docker.
- For optimal cleaning of the rover canisters, use a water temperature of 37.8 to 43.3 ˚C [100 to 110 ˚F].
- The docker provides power to the rover during the docking process.
- DO NOT lock the rover casters while the rover is connected to the docker.

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8.4.3.1 To Prepare the Docker

1. Make sure the docker power switch is in the ON position and illuminated (Figure 44).
2. Make sure the bottle of Neptune Docking Detergent REF 0700-001-026 is connected and has detergent to perform a wash cycle.

NOTE: The end of the inlet tube must be located at the bottom of the detergent bottle. See the *instructions for use* supplied with the detergent bottle.

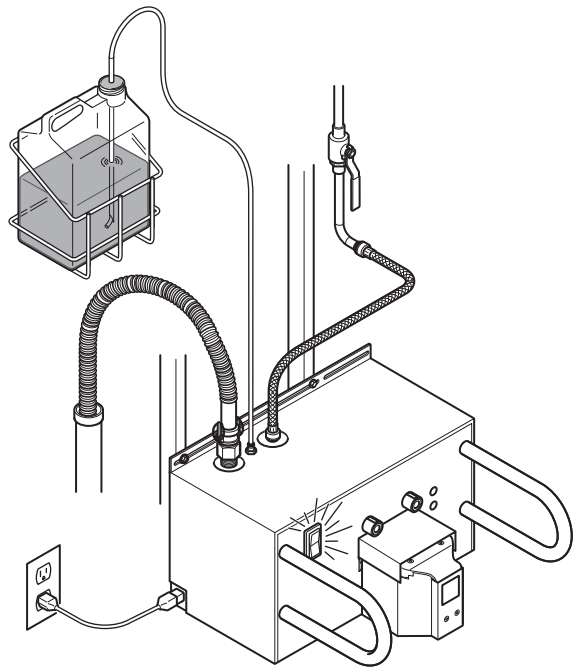

Figure 44 – To Prepare the Docker

8.4.3.2 To Perform a Docking Cycle

NOTE: The default cycle will start within 15 seconds, automatically, unless another option is manually selected from the DOCKING MODE screen menu. See *Table 18 Docking Cycle Options*.

1. Push the rover toward the docker and between the docker guides until the rover and docker attach automatically (Figure 45). DO NOT lock the casters. The DOCKING MODE screen will appear (Figure 15).
2. If another cycle option is selected before the initiation of the default cycle, touch the START button to initiate the selected cycle (Figure 46).

NOTE: During the cycle a 'progress' message will appear on the screen, followed by a 'completed' message.

3. After the cycle is complete, touch the RELEASE FROM DOCK button to release the rover from the docker. Pull the rover away from the docker.
4. Visually inspect the canisters for any remaining soil. If soil remains, an Extended Wash cycle is available to provide a more thorough cleaning of the canisters.

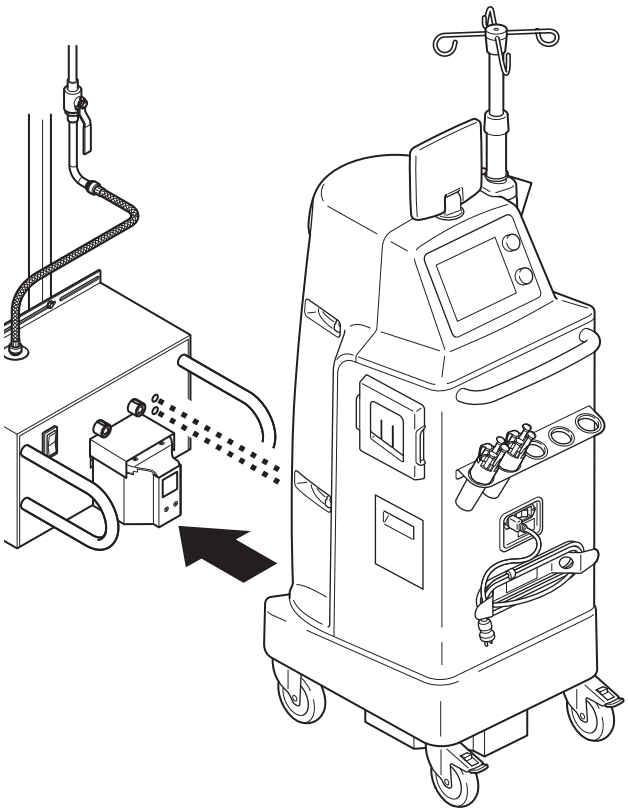

Figure 45 – To Dock the Rover

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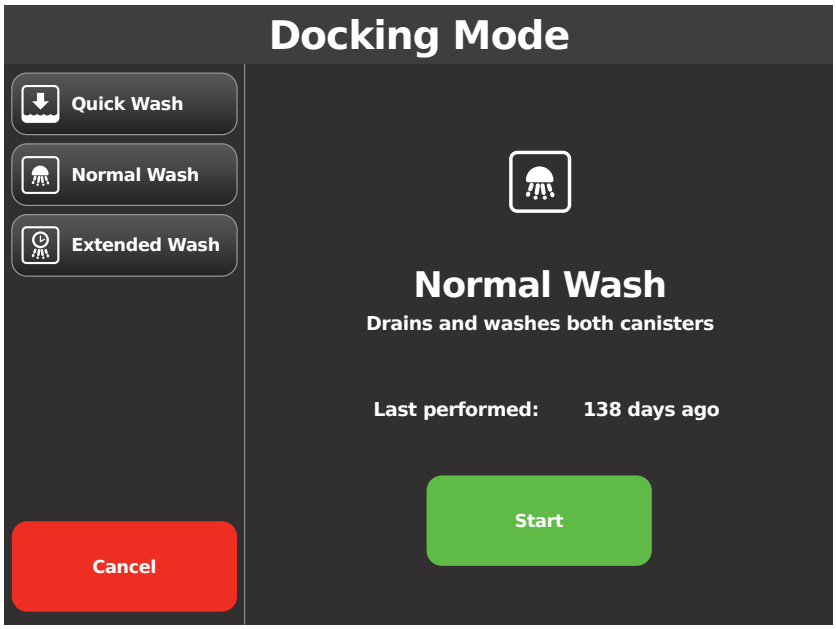

Figure 46 – Docking Mode Screen - Normal Wash

NOTES:

- During the first rover docking procedure, the information on the main display may appear inconsistent. The procedure may also take a few more minutes than specified in *Table 18 Docking Cycle Options*. Both conditions are normal and temporary.
- To exit the NORMAL WASH or EXTENDED WASH cycle, touch the ABORT TO QUICK WASH button to perform a QUICK WASH cycle. After the QUICK WASH cycle is complete, touch the RELEASE FROM DOCK(er) button to disconnect the rover from the docker.

Table 18 – Docking Cycle Options

CYCLES	DESCRIPTION	TIME (APPROX.)
Quick Wash	Cycle drains the contents of both canisters, applies detergent to the interior walls of both canisters, and rinses the detergent with water. Fewer rinse cycles occur.	2 to 4 minutes
Normal Wash	Cycle drains the contents of both canisters, applies detergent to the interior walls of both canisters, and rinses the detergent with water. More rinse cycles occur.	5 to 7 minutes
Extended Wash	Cycle drains the contents of both canisters, applies detergent to the interior walls of both canisters, and rinses the detergent with water. Intermittent periods of soaking occur during the cycle.	45 to 55 minutes

NOTES:

- Prefill fluid will remain inside each canister after a cycle is complete. Prefill contains a specified amount of detergent for initiating the breakdown of fluid waste collected during the rover's next use.
- If this is the initial docking of the rover, make sure the rover is tested before use. See *Section 8.1.3 To Test the Rover*.

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9 Inspection and Maintenance

⚠ WARNINGS:

- Upon initial receipt and before each use, inspect each component for damage. DO NOT use any equipment if damage is apparent. See *Table 19 Inspection Schedule and Criteria*.
- DO NOT disassemble, modify, service, or repair any equipment without the authorization of the manufacturer.

NOTES:

- Only biomedical equipment technicians trained and experienced in the maintenance of this reusable medical device should install and maintain this equipment.
- For service, contact your Stryker sales representative or call Stryker Neptune Customer Service. See *Section 1.3 Contact Information*. Outside the US, contact your nearest Stryker subsidiary.
- Maintenance documentation for this equipment is available upon request to Stryker-authorized service personnel only.

Table 19 – Inspection Schedule and Criteria

INTERVAL	CRITERIA	ACTION
Before initial use	Inspect equipment for damage or missing components.	If damage is apparent, replace the equipment. See *Section 5.3 For Use With*.
	Make sure the rover and docker operate properly.	See the following: *Section 8.4.3 To Dock the Rover, Section 8.1.3 To Test the Rover, and Section 8.1.4 To Adjust the Rover Settings.*
Before each use and after each cleaning and disinfection	Inspect equipment for damage or missing components.	If damage is apparent, replace the equipment. See *Section 5.3 For Use With*.
Before each use and after each cleaning and disinfection	Inspect for corrosion, discoloration, pitting, cracked materials, or unacceptable deterioration on any external surfaces, including labels and product markings.	If damage is apparent, replace the equipment. See *Section 5.3 For Use With*.
	Inspect the canister exterior, smoke evacuator filter cover, and infrared communication window for cracks or damage.	
	Inspect all of the casters and make sure the locks function properly.	
	Inspect the power cord for cuts and the power cord plug for bent pins.	
	Inspect the power cord receptacle for bent pins or bent contacts.	
	Inspect the infrared communication window for any dirt or debris.	Thoroughly remove any dirt or debris on the infrared communication window. See *Section 10 Cleaning and Disinfection*.

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INTERVAL	CRITERIA	ACTION
Six months	Inspect the replacement date on the label of the fluid suction filter. The fluid suction filter life is 500 hours.	Replace the fluid suction filter every six months or as indicated on the main display. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
	Inspect the replacement date on the label of the smoke evacuator filter. The smoke evacuator filter life is 80 hours.	Replace the smoke evacuator filter every six months or as indicated on the main display. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.

NOTE: If any component must be discarded, see *Section 12 Disposal/Recycle*.

10 Cleaning and Disinfection

WARNING: ALWAYS clean and disinfect the equipment as indicated upon initial receipt and before each use. Failure to comply may cause infection and result in patient or healthcare staff injury.

CAUTIONS:

- DO NOT immerse any system component in liquid. DO NOT allow liquids or moisture to enter any electrical connection.
- DO NOT sterilize any system component.
- DO NOT use solvents, lubricants, or other chemicals, including glutaraldehyde or similar chemical cleaners, unless otherwise specified. See *Section 17 Glossary.*
- DO NOT use unapproved disinfectants. Failure to comply may cause system damage.

10.1 Recommended Equipment and Materials

- PPE as recommended by the disinfectant supplier
- Soft, lint-free cloth
- United States Environmental Protection Agency (US EPA) registered disinfectant with a claim for activity against Hepatitis B. The following disinfectants have been validated for use on the exterior surfaces of the Stryker Neptune 3 Waste Management System:

  Sodium Hypochlorite Based - Clorox® Clean-Up® Disinfectant Cleaner with Bleach (EPA Reg. #67619-17)

  Quaternary Ammonium Based - CaviCide® (EPA Reg. #46781-6)

10.2 To Wipe Down the Rover

1. Wipe all external surfaces of the rover with a soft, lint-free cloth moistened with a non-abrasive, hospital disinfectant prepared to the manufacturer's instructions. Pay particular attention to highlighted critical areas such as the handle, control panel, communication window, and manifold receptacles (Figure 47).
2. Upon the removal of visible, gross soil, use a clean cloth moistened with disinfectant and wipe all surfaces. Surfaces must remain visibly wet at room temperature for at least the minimum time specified in the instructions for use supplied by disinfectant manufacturer.
3. Remove any excess disinfectant solution using a soft, lint-free cloth moistened with water if required by the instructions supplied by the disinfectant manufacturer.
4. Inspect the rover. See *Section 9 Inspection and Maintenance*.
5. Refill the manifold holder with new, unused manifolds, as required. See *Section 5.3 For Use With* for ordering information.
6. If the rover will be used again, use the rover handle to push and relocate the rover. See *Section 8.2.1 To Prepare the Rover*. If the rover will no longer be used, use the rover handle to push and relocate the rover to a storage area. See *Section 11 Storage and Handling*.

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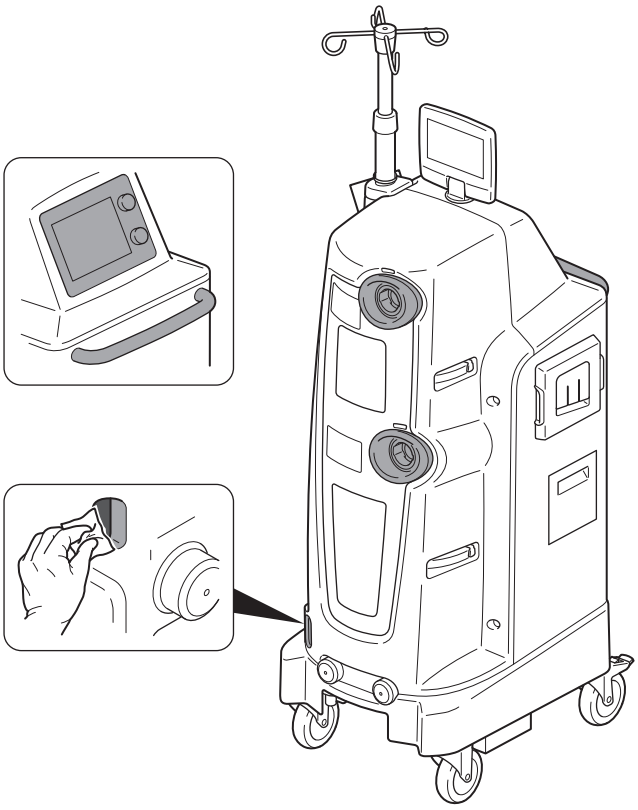

Figure 47 – To Wipe Down the Rover

11 Storage and Handling

CAUTIONS:

- ALWAYS store and transport the equipment within the specified environmental condition values throughout its useful life. See *Section 14 Specifications*.
- ALWAYS call Stryker Neptune Customer Service before transporting or storing this equipment in freezing conditions. See *Section 1.3 Contact Information*. Failure to comply will cause the expansion of frozen internal fluid to damage the equipment.

NOTE: The rover does not have to be connected to facility power when not in use.

12 Disposal/Recycle

⚠ WARNING: BLOODBORNE PATHOGEN AND CONTAMINATION HAZARDS

- ALWAYS follow local regulations for safe handling, recycling, and disposal of biohazardous fluid waste and Neptune equipment.
- Call Neptune Customer Service for rover decontamination procedures. See *Section 1.3 Contact Information*.

Failure to comply may cause environmental contamination or infection and result in personal injury.

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13 Troubleshooting

13.1 Rover Operation

NOTE: For service, contact your Stryker sales representative or call Stryker Neptune Customer Service. See *Section 1.3 Contact Information*. Outside the US, contact your nearest Stryker subsidiary.

SYMPTOM	PROBABLE CAUSE	ACTION
The rover does not power up and the power switch is in the ON position.	Power cord is not connected or is not connected securely.	Connect the supplied power cord or make sure the power cord is connected securely.
	Facility power is not available or off.	Make sure facility power is provided to the hospital-grade power receptacle.
The rover does not recognize a manifold.	Manifold is altered or damaged.	Replace the manifold. See *Section 5.3 For Use With* and the *instructions for use* supplied with the manifold.
No vacuum pump action after the START SUCTION button is touched.	Canisters are full and an error occurs.	Dock the rover.
	The rover is damaged.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
The rover's fluid suction is weak or insufficient.	Manifold is not installed correctly.	Rotate the manifold to make sure it is locked in place.
	Unused manifold ports are open.	Close all unused inlet ports of the manifold installed in each canister.
	Suction tubing connection is not secure.	Make sure all suction tubing connections are secure.
	Unused suction tubing is not clamped.	Clamp any suction tubing not in use.
	Suction tubing is blocked or damaged.	Clear or replace any suction tubing in use.
	Suction accessory is blocked or damaged.	Clear or replace the suction accessory.
	Suction tubing is too long or has a narrow diameter.	Use shorter length or larger diameter suction tubing.
	Manifold is clogged or damaged.	Replace the manifold. See *Section 5.3 For Use With* and the *instructions for use* supplied with the manifold.
	The suction control dials are adjusted too low.	Turn the suction control dials to adjust the suction limit to the proper level.
	The fluid suction filter requires replacement.	Replace the fluid suction filter. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
	The rover is damaged.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
The rover's suction capability is lost.	An medium priority alarm has occurred.	See *Section 13.3 Troubleshooting Codes.*
	The rover is damaged.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.

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SYMPTOM	PROBABLE CAUSE	ACTION
A filter notification message appears on the main display.	The fluid suction filter has exceeded its useful life.	Replace the HEPA fluid suction filter. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
	The smoke evacuator filter has exceeded its useful life.	Replace the smoke evacuator ULPA filter. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
The rover is releasing a strong odor.	The fluid suction filter has exceeded its useful life.	Replace the fluid suction HEPA filter. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
	The docker does not dispense detergent during the cleaning cycle.	See *Section 13.2 Docking Station Operation* and *Section 13.3 Troubleshooting Codes*.
	The canisters require special additional cleaning.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
The smoke evacuator fails to operate after the ON button is touched.	The smoke evacuator is damaged.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
A smoke evacuator notification message occurs.	The smoke evacuator filter is not installed, not installed correctly, or damaged.	Install the smoke evacuator filter correctly. See *Section 5.3 For Use With* and the *instructions for use* supplied with the filter.
	The smoke evacuator is damaged.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
IV pole height cannot be adjusted to its maximum height.	IV pole is supporting too much weight.	Remove excessive weight from the IV pole. See *Section 14 Specifications.*
	IV pole motor has overheated.	Wait 10 minutes. Touch and hold the UP or DOWN button to adjust the IV pole height.
	The IV pole is bent, kinked, or pinched.	Remove the rover from use. Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
Fluid does not drain from the 4-liter canister into the 20-liter canister after pushing the EMPTY 4L CANISTER button.	A clog exists at the bottom of the 4-liter canister.	1. Remove the rover from use. 2. Close all used and unused manifold inlet ports. 3. Turn both suction control dials to the maximum suction value. 4. Touch the START SUCTION button. 5. Touch the EMPTY 4L CANISTER button. If the clog persists, contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
An error occurs during EMPTY 4L CANISTER procedure.	The contents of the 4-liter canister cannot fit into the 20-liter canister.	Dock the rover to empty both canisters of fluid waste. See *Section 8.4.3 To Dock the Rover.*
	The rover was unable to prefill the 4-liter canister.	Dock the rover. Contact Stryker Neptune Customer Service if the problem persists. See *Section 1.3 Contact Information*.
Sporadic electrical interference is experienced.	Electrical noise is present.	Turn off all the electrical equipment not in use in the room.
		Relocate the electrical equipment to maximize the distance between the equipment. Increase spatial distance.
		Connect the electrical equipment into different hospital-grade facility power receptacles with protective earth (ground).

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13.2 Docking Station Operation

NOTE: See the Neptune 2 Docking Station *Instructions For Use* REF 0702-014-700 and the Docking Station *Instructional Poster* REF 9100-003-353 for additional troubleshooting information.

SYMPTOM	PROBABLE CAUSE	ACTION
The rover will not dock or an error has occurred during docking.	The docker power cord is not connected or is loosely connected.	Make sure the docker power cord is connected securely.
	The docker power switch is in the OFF position.	Make sure the power switch is in the ON position and illuminated.
		If power switch is OFF, push the power switch to the ON position. Wait 60 seconds. Dock the rover.
	The docker power switch is in the ON position, but not illuminated.	Make sure facility power is provided to the hospital-grade power receptacle. If facility power is OFF, apply facility power to the docker. Wait 60 seconds. Dock the rover.
	The rover is not completely connected to the docker.	Push the rover forward enough to complete a docker-rover interface connection. See *Section 17 Glossary* for the definition of a docker-rover interface.
	Communication between the rover and docker is interrupted because the infrared communication window is either dirty or obstructed.	Remove the dirt or debris from the rover's infrared communication window. See *Section 10 Cleaning and Disinfection*. Dock the rover.
		Remove any obstruction from the docker's infrared communication windows. Make sure there are no tubes, hoses, or towels covering the docker's infrared communication windows. Dock the rover.
	The docker is not receiving facility water.	Make sure the water inlet hose is connected correctly and the facility water supply valve is open. Dock the rover.
	The docker requires a power reset.	Remove power, then apply power to the docker. Wait 60 seconds. Dock the rover.
	If the problem persists, the docker may be damaged.	Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
Prefill fluid remains inside each rover canister after a cycle is complete.	The presence of prefill is normal. This water and detergent solution (prefill) initiates the breakdown of fluid waste collected during the rover's next use.	No action is required.
The docker does not dispense detergent during the cleaning cycle.	The bottle of detergent is empty.	Replace the bottle of detergent. See *Section 5.3 For Use With*.
	The end of the detergent inlet tube is not immersed in the detergent.	Make sure the detergent inlet tube is routed through the tube stiffener and the end of the tube reaches the bottom of the detergent bottle.
	The detergent inlet tube is not connected securely to the detergent inlet port of the docker.	Securely connect the detergent inlet tube to the detergent inlet port of the docker.
	If the problem persists, the docker may be damaged.	Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.

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SYMPTOM	PROBABLE CAUSE	ACTION
The rover canisters are not clean after a cleaning cycle.	The water temperature supplied to the docker is not adjusted for optimal cleaning.	For optimal cleaning of the canisters, use a water temperature of 37.8 to 43.3 ˚C [100 to 110 ˚F]. See the *instructions for use* supplied with the docker.
	The bottle of detergent is empty.	Replace the bottle of the detergent. See *Section 5.3 For Use With* and the *instructions for use* supplied with the detergent.
An error occurs while the rover is docked and the rover cannot be removed from the docker.	The fluid connectors prevent the removal of the rover from the docker.	Remove power from the docker; apply power to the docker. Wait 20 seconds.
		Remove the rover from the docker. Cycle docker power. Wait 60 seconds; try docking the rover again.
	If the problem persists, the fluid connectors may be damaged.	Contact Stryker Neptune Customer Service. See *Section 1.3 Contact Information*.
The rover cannot be removed from docker.	The two rear casters are locked.	Make sure the two rear casters are unlocked. DO NOT lock the casters when the rover is docked. Pull the rover away from the docker.
	The operator failed to acknowledge the docking cycle is complete.	From the DOCKING MODE screen, touch the RELEASE FROM DOCK(er) button to disconnect the rover from the docker.

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13.3 Troubleshooting Codes

NOTES:

- A low or medium priority alarm message may appear in the notification or error message area on the control screen, respectively. Touch the indicator area to access the drop-down list and/or message.
- For service, contact your Stryker sales representative or call Stryker Neptune Customer Service. See *Section 1.3 Contact Information*. Outside the US, contact your nearest Stryker subsidiary.

CODE	MESSAGE	PRIORITY	ACTION
0.X	System Error	MEDIUM	Call service.
1.1	Memory Error	LOW	Setting options, including brightness, loudness, and the default docking cycle require resetting. See *Section 8.1.4 To Adjust the Rover Settings*.
1.2			Collected data erased. This includes manifolds used, filter hours, last docking cycle, etc.
1.X	Memory Error	MEDIUM	Call service.
2.2	IPC Failure	MEDIUM	Call service.
3.0	Docker COM Error	MEDIUM	Remove the rover from the docker. Cycle docker power. Wait 60 seconds; try docking the rover again.
3.1	Coupling Error	MEDIUM	Remove the rover from the docker. Cycle docker power. Wait 60 seconds; try docking the rover again.
3.2			Call service.
3.3	Offload Error	MEDIUM	Remove the manifolds from the canisters; dock the rover again.
3.4			Call service.
3.5	Prefill Error	MEDIUM	Make sure facility water is supplied to the docker; dock the rover again.
3.6			
3.7	Coupling Error	MEDIUM	Call service.
3.9			
3.12	Dock Incomplete	LOW	Remove the rover from the docker. Cycle docker power. Wait 60 seconds; try docking the rover again.
3.13	Docker Not Ready	MEDIUM	Remove the rover from the docker. Cycle docker power. Wait 60 seconds; try docking the rover again.
3.15	Need To Dock	LOW	Dock the rover; the used rover has not been docked in 48 hours.
4.1	Vacuum Error	MEDIUM	Call service.
4.3	Empty Canister Error	LOW	Dock the rover to remove clog from 4L canister.
4.4	Prefill Error	MEDIUM	Dock the rover to fill prefill tank.
5.0	Filter Expired	LOW	Replace fluid suction HEPA filter; reset filter life counter.
5.1			Replace smoke ULPA filter; reset filter life counter.
6.X	Empty Tank Error	MEDIUM	Call service.
7.X	Level Sensor Error	MEDIUM	Call service.
7.7	Prefill Error	MEDIUM	Make sure facility water is supplied to the docker; dock the rover again.
7.8			
8.X	Level Sensor Error	MEDIUM	Call service.
9.0	IV Pole Error	LOW	Call service.
9.1	IV Pole Notification	LOW	Reduce the weight on the IV pole hooks; wait 10 minutes and retry raising the pole.
9.2			
10.0	Smoke Evac Error	LOW	Call service.
10.1			
10.2	No Smoke Filter	LOW	Install new ULPA smoke evacuator filter.

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CODE	MESSAGE	PRIORITY	ACTION
12.X	Level Sensor Error	MEDIUM	Call service.
13.X	Vacuum Error - 20L	MEDIUM	Call service.
13.6	20L Canister Pressure	LOW	Turn on suction to reduce the positive pressure in the canister. If this notification persists, call service.
14.X	Vacuum Error - 20L	MEDIUM	Call service.
15.X	Vacuum Error - 4L	MEDIUM	Call service.
15.6	4L Canister Pressure	LOW	Turn on suction to reduce the positive pressure in the canister. If this notification persists, call service.
16.X	Vacuum Error - 4L	MEDIUM	Call service.
18.3	4L Almost Full	LOW	Prepare to use an alternate source of suction, or empty the 4L canister of fluid waste to prevent the loss of suction.
18.4	20L Almost Full	LOW	Prepare to use an alternate source of suction. 20L suction will stop when the 20L canister is full.
18.5	4L Full	MEDIUM	Use an alternate source of suction, or empty the 4L canister to restore lost suction to the 4L canister.
18.6	20L Full	MEDIUM	Use an alternate source of suction, or dock the rover to empty the 20L canister.

CODE	MESSAGE	PRIORITY	ACTION
20.1	Audio Failure	MEDIUM	Cycle power to the rover. Push the power switch to the OFF position; then push the switch to the ON position. If this error persists, call service.
21.0	Knob/Dial Error	MEDIUM	Call service.
22.0	4L Manifold Error	MEDIUM	Call service.
22.1			
22.2			
23.0	20L Manifold Error	MEDIUM	Call service.
23.1			
23.2			
24.11	4L Manifold Error	LOW	Install new manifold.
24.13	Expired 4L Manifold	LOW	Install new manifold.
24.15	Used 4L Manifold	LOW	Install new 4L manifold before performing the next surgical procedure.
25.11	20L Manifold Error	LOW	Install new manifold.
25.13	Expired 20L Manifold	LOW	Install new manifold.
25.15	Used 20L Manifold	LOW	Install new 20L manifold before performing the next surgical procedure.

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14 Specifications

Model:	Neptune 3 Rover
REF:	0703-001-000
Electrical Power Requirements:	120 V ~, 60 Hertz (Hz), 12.0 Amps (A), single phase 20 V ⎓ , 3 A during docking procedure; rover receives power from docker REF 0702-014-000
Product Safety Certification:	**Canadian Standards Association (CSA) International** **American National Standards Institute (ANSI)/Association for the Advancement of Medical Instrumentation (AAMI)** *ANSI/AAMI ES60601-1:2005/(R) 2012 and A1: 2012, Medical Electrical Equipment — Part 1: General Requirements for Basic Safety and Essential Performance*; Consolidated Reprint (2009); Amendment 2 (2010); 3rd Edition, 3.1, includes Amendment 1 (2012).
Product Safety Compliance:	**International Electrotechnical Commission (IEC)** *IEC 60601-1:2005, Medical Electrical Equipment — Part 1: General Requirements for Basic Safety and Essential Pewrformance*; IEC Corrigendum 1 (2006); IEC Corrigendum 2 (2007) + AM1:2012 *IEC 60601-1-6:2010 (Third Edition) + A1:2013, Medical Electrical Equipment – Part 1-6: General Requirements for Basic Safety and Essential Performance – Collateral Standard: Usability* *IEC 62366-1:2007 (First Edition) + A1:2014, Medical Devices - Part 1: Application of Usability Engineering to Medical Devices* *IEC 60601-1-8:2006 (Second Edition) + AM1:2012, Medical Electrical Equipment – Part 1-8: General Requirements for Basic Safety and Essential Performance – Collateral Standard: General Requirements, Tests and Guidance for Alarm Systems in Medical Electrical Equipment and Medical Electrical Systems* *IEC 62304:2006 (First Edition), Medical Device Software – Software Life Cycle Processes* *IEC 62471:2006 (First Edition), Photobiological safety of lamps and lamp systems*
Dimensions:	
Width:	48.3 cm [19 inch]
Height:	259 cm [102 inch] with powered IV pole at maximum height; 177.8 cm [70 inch] with powered IV pole at minimum height
Depth:	58.4 cm [23 inch]
Mode of Operation:	Continuous
Sound Pressure:	Medium Priority Alarm, 57 - 62 dB (not adjustable, see *IEC 60601-1-8: 2006 (Second Edition) + AM1:2012*)
Adjustable Suction Limit:	50 to 520 mm-Hg; measured with all ports closed
Vacuum Measurement Accuracy:	± 5% of full scale (± 26 mm-Hg)
Suction Limit Accuracy:	≤ 26 mm-Hg or 10% of setting
Mass:	131 kg [288 lb] - collection canisters empty (prefill only) 155 kg [341 lb] - collection canisters full
Volume:	24-liter capacity (combination of 4-liter and 20-liter canisters)
Volume Measurement Accuracy:	4-liter canister, ± 50 mL 20-liter canister, ± 150 mL **NOTE:** Volume measurement accuracy specified does not account for fluid evaporation or an inclined plane of operation that exceeds the specified range.
IV Pole Capacity:	12000 mL or 3000 mL per IV pole hook; for example four three-liter (3000 mL) fluid bags

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Inclined Plane of Operation:	± 2.5 degrees
Equipment Type:	Type CF Applied Part
Equipment Classification:	Class I Medical Electrical (ME) Equipment
Ingress Protection (IP):	IPX0
LED Classification - IR Communication Window:	**WARNING: INVISIBLE LED RADIATION** DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS CLASS 1M LED PRODUCT — Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye injury hazard.
Ground Type:	Protective Earth (ground); when connected to facility power

Environmental Conditions:	**Operation**	**Storage and Transportation (before initial use)**	**Storage and Transportation (after initial use)**
Temperature Limitation:	14 °C – 26 °C	-20 °C – 40 °C	10 °C – 40 °C
Humidity Limitation:	20 % – 75 %	10 % – 75 %	10 % – 75 %
Atmospheric Pressure Limitation:	70 *kPa* – 106 *kPa*	50 *kPa* – 106 *kPa*	50 *kPa* – 106 *kPa*

Power Cord General Specifications:

Current Rating:	15 A
Voltage Rating:	125 VAC
Frequency Rating:	60 Hz
Conductor Size:	14 AWG
Connector Type:	IEC 60320 C13
Cord Lengths:	5.5 m
Temperature Rating:	105˚C minimum
Cord Type:	SJT, H05VV-F, HVCTF, RVV or equivalent (unshielded)
Dielectric Withstand:	1500 VAC for 60-seconds between Line/Neutral and Protective Earth
Mains:	Plug shall have a ground/earthing pin
Certification:	All applicable in-country medical electrical requirements
Additional Power Cord Requirements:	The Canadian and US power supply cord shall have a tag or label in English and French indicating that “GROUNDING RELIABILITY CAN ONLY BE ACHIEVED WHEN EQUIPMENT IS CONNECTED TO AN EQUIVALENT RECEPTACLE MARKED ‘HOSPITAL ONLY’ OR ‘HOSPITAL GRADE’ “ or equivalent wording.

Agency Approval: CSA Certified for Canada and US or UL Recognized for Canada and US.

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15 Electromagnetic Compatibility

Guidance and manufacturer's declaration - electromagnetic emissions		
The Neptune 3 Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 3 Rover should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment - guidance**
RF emissions CISPR 11	Group 1	The Neptune 3 Rover uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The Neptune 3 Rover is suitable for use in all establishments other than domestic, and may be used in domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes, provided the following warning is heeded: **WARNING:** This equipment/system is intended for use by healthcare professionals only. This equipment/system may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as reorienting or relocating the Neptune 3 Rover or shielding the location.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacturer's declaration - electromagnetic immunity			
The Neptune 3 Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 3 Rover should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/ burst IEC 61000-4-4	± 2 kV for power supply lines ± 1kV for input/output lines	± 2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	± 1 kV line(s) to line(s) ± 2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Neptune 3 Rover requires continued operation during power mains interruptions, it is recommended that the Neptune 3 Rover be powered from an uninterruptible power supply or a battery.
Power frequency (60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: U_T is the a.c. mains voltage prior to application of the test level.			

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<table>
<tr><th colspan="4">Guidance and manufacturer's declaration - electromagnetic immunity</th></tr>
<tr><td colspan="4">The Neptune 3 Rover is intended for use in the electromagnetic environment specified below. The customer or the user of the Neptune 3 Rover should assure that it is used in such an environment.</td></tr>
<tr><th>Immunity test</th><th>IEC 60601 test level</th><th>Compliance level</th><th>Electromagnetic environment - guidance</th></tr>
<tr><td>Conducted RF
IEC 61000-4-6</td><td>3 Vrms
150 kHz to 80 MHz</td><td>3 V</td><td rowspan="2">Portable and mobile RF communications equipment should be used no closer to any part of the Neptune 3 Rover, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance
$d=1.2\sqrt{P}$
150 kHz to 80 MHz

$d=1.2\sqrt{P}$
80 MHz to 800 MHz

$d=2.3\sqrt{P}$
800 MHz to 2.5 GHz

where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[a] should be less than the compliance level in each frequency range[b].

Interference may occur in the vicinity of equipment marked with the following symbol:
 </td></tr>
<tr><td>Radiated RF
IEC 61000-4-3</td><td>3 V/m
80 MHz to 2.5 GHz</td><td>3 V/m</td></tr>
<tr><td colspan="4">NOTE 1: At 80 MHz and 800 MHz the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</td></tr>
<tr><td colspan="4">[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Neptune 3 Rover is used exceeds the applicable RF compliance level above, the Neptune 3 Rover should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Neptune 3 Rover.

[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</td></tr>
</table>

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Recommended separation distances between portable and mobile RF communications equipment and the Neptune 3 Rover			
The Neptune 3 Rover is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Neptune 3 Rover can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Neptune 3 Rover as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter **W**	**Separation distance according to frequency of transmitter** **m**		
	150 kHz to 80 MHz $d=1.2\sqrt{P}$	80 MHz to 800 MHz $d=1.2\sqrt{P}$	800 MHz to 2.5 GHz $d=2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

16 Federal Communications Commission (FCC) Statement Concerning Radio Frequency Interference

16.1 Manifold Authentication

16.1.1 FCC Compliance

This device complies with FCC 47 CFR Part 15 Subpart C rules, limits for a Class B emissions. Operation is subjected to the following two conditions:

1. This device may not cause harmful interference,
2. This device must accept any interference received, including interference that may cause undesired operation.

16.1.2 Radio License

Contains manifold receptacle printed circuit board assembly (PCBA), Stryker part number 0703-001-820; FCC ID Q9R-0703001820.

16.2 Docking Interface

16.2.1 FCC Compliance

This device complies with FCC 47 CFR Part 18 Inductive Coupling for power transfer for a cleaning cycle between the rover and docker.

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17 Glossary

ALARM CONDITION – a potential or actual hazardous situation exists for which user AWARENESS or RESPONSE is required.

APPLIED PART – a component of an electrical medical device that comes into physical contact with the patient during normal use to perform its function. The fluid suction tubing and smoke suction tubing are applied parts.

BS EN ISO 10079-1: 2009, CLAUSE 9.4 – the requirements in IEC 60601-1:1988, clause 16 apply; also the housing shall be constructed of fire-retarding material which withstands the needle-flame test specified in IEC 60695 2-2 when the flame is applied to any point on the inside or outside surface of the housing for 20 seconds.

BS EN ISO 10079-1:2009, CLAUSE 13.8 – interruption and restoration of the power supply to the suction equipment shall not cause any hazard, and the vacuum and flow rate shall not vary by more than 10% from the set value.

DOCKER-ROVER INTERFACE – includes four elements: (1) docker electromagnets attract and hold the rover strike plates to facilitate physical connection, (2) the docker power coupler provides electrical energy to the rover during docking, (3) rover and docker fluid couplings provide pathways for fluid waste outflow and clean water inflow to the rover canisters, and (4) infrared communication is used to exchange information between the docker and rover.

ERROR – indicates a medium priority alarm condition, including a software or hardware fault, or an unexpected operating condition.

EXPIRED MANIFOLD – indicates 36 hours have elapsed since the new manifold was first exposed to suction.

FLUID LEVEL SENSOR – a sensor located in each collection canister that determines the current fluid volume level. The presence of prefill fluid ensures the sensor is always floating.

FLUID STACKING – if the rover has sufficient fluid volume capacity in one or both collection canisters, it may be used for more than one surgical procedure; fluid waste is ‘stacked’ between procedures.

GLUTARALDEHYDE – a toxic chemical used to clean and disinfect.

INFRARED COMMUNICATION – an information exchange method using a receiver, a transmitter, and invisible infrared energy.

INVALID MANIFOLD – a manifold that may have been altered, damaged, or previously exposed to suction and has since expired.

LOW PRIORITY ALARM – indicates user AWARENESS is required.

MEDIUM PRIORITY ALARM – indicates PROMPT user RESPONSE is required.

NEW MANIFOLD – a valid manifold; suction has never been applied to the manifold.

NOTIFICATION – indicates a low priority alarm condition that will not prevent use of the rover. The rover will remain fully functional after experiencing a notification.

OFF LOADING – the contents of both rover canisters are emptied into a facility waste disposal drain during docking.

PREFILL FLUID – each rover canister is prefilled with a water and detergent solution after each docking cycle; the solution initiates the breakdown of fluid waste collected during use.

PREFILLING – adding prefill fluid to both rover canisters.

USED MANIFOLD – a valid manifold exposed to suction, but not yet expired.

VALID MANIFOLD – a NEW or USED manifold (but not yet expired).

18 Software License Notices

See the *Neptune 3 Software License Addendum REF 0703-001-701* supplied with the rover.

Trademarks not the property of Stryker Corporation are the property of their respective owners.

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Stryker Instruments
4100 E. Milham
Kalamazoo, Michigan
(USA) 49001
1-269-323-7700
1-800-253-3210

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Signature History Report

Version	Signature	Role	Event Date	Vote
D	Foor, Jacob	CA_Owner	2017-05-25 15:45:08 EDT	Continue
D	Meginnis Nick	CA_Marketing Manager	2017-05-25 15:48:10 EDT	Approve
D	Zimmerman, Gretchen	CA_Clinical Sciences	2017-05-26 14:15:53 EDT	Approve
D	Khurmi, Paminder	CA_Regulatory Affairs	2017-05-30 10:06:45 EDT	Rework
D	Joseph, Kaylee	CA_Quality Engineer	2017-05-30 14:35:17 EDT	Rework
D	Prus Emily	CA_Product Safety	2017-05-30 16:29:29 EDT	Rework
D	Rajakutty Sushmitha	CA_Product Design Engineer	2017-05-31 13:58:57 EDT	Rework
D	Foor, Jacob	CA_Owner	2017-06-02 11:35:12 EDT	Continue
D	Khurmi, Paminder	CA_Regulatory Affairs	2017-06-02 12:01:19 EDT	Approve
D	Joseph, Kaylee	CA_Quality Engineer	2017-06-02 13:45:39 EDT	Approve
D	Meginnis Nick	CA_Marketing Manager	2017-06-02 15:14:57 EDT	Approve
D	Rajakutty Sushmitha	CA_Product Design Engineer	2017-06-02 16:26:03 EDT	Approve
D	Prus Emily	CA_Product Safety	2017-06-05 08:22:53 EDT	Approve
D	Zimmerman, Gretchen	CA_Clinical Sciences	2017-06-05 15:11:01 EDT	Approve
D	Foor, Jacob	CA_Owner	2017-06-07 12:06:00 EDT	Continue
D	Rajakutty Sushmitha	CA_Product Design Engineer	2017-06-07 12:14:55 EDT	Approve
D	Meginnis Nick	CA_Marketing Manager	2017-06-07 13:04:35 EDT	Approve
D	Joseph, Kaylee	CA_Quality Engineer	2017-06-07 15:01:46 EDT	Approve
D	Khurmi, Paminder	CA_Regulatory Affairs	2017-06-08 09:46:36 EDT	Approve

Signature History Report

Version	Signature	Role	Event Date	Vote
D	Zimmerman, Gretchen	CA_Clinical Sciences	2017-06-13 16:40:26 EDT	Approve
D	Prus Emily	CA_Product Safety	2017-06-14 09:13:34 EDT	Approve
D	Bernardi Adam	Editor	2017-06-14 10:10:15 EDT	Continue

NOTE: IF THIS REPORT IS BLANK, PLEASE SEE WINDCHILL ECN FOR SIGNATURES.

Related Information

CR Number	**CR0302542**
CR Class	**DMR-Commercially Released**
Originating Entity	**INST: Kalamazoo**
Origin	**Other**
Initial CR Approval Date	**08/17/2016 08:23:56**
CN Number	**CN153294**
CA Number	**CA181900**
NPD Disposition Plan	**N/A**